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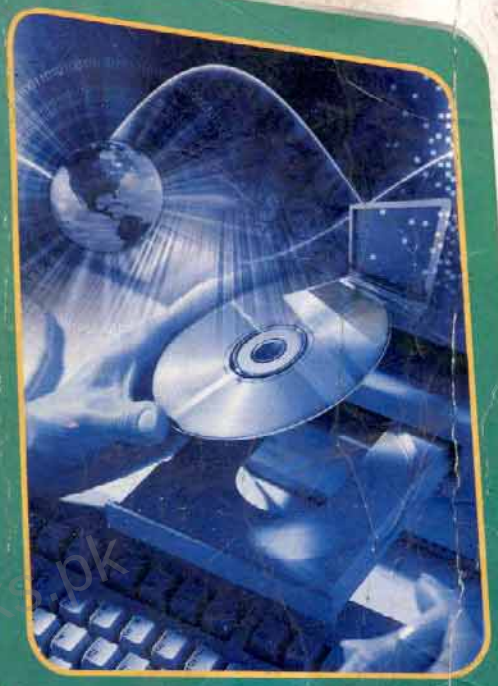
COMPUTER STUDIES

11



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IT Series

Revised & Updated

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IT Series Publications

Published by: IT Series Publications
Mob: (+92) 0321 661 56 56

Price Rs. **180/-**

Can be had from:

Preface

This book is according to the new syllabus of **computer studies** for **Intermediate Part-I**. It covers the **subjective** as well as **objective** part of question paper. We have tried our best to keep it as simple as possible. The language is simple and easy to understand for the students.

The book is written specially with examination point of view. It will help the students to get highest marks in the examination of any education board.

The book also includes the following:

- **Short Questions**
- **Multiple Choices**
- **Fill in the Blanks**
- **True/False**
- **Previous Board Papers**

Readers are welcome to send suggestions for improvements of the book by sending email to us at **comments@itseries.com.pk**. You can also visit our website **www.itseries.com.pk** for any interaction and latest information about the book.

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(For Class XI)

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Total Marks: 100

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Chapter 1

Basics of Information Technology

Q. Define software and hardware? Describe their relationship.

A set of instructions given to the computer to solve a problem is called **software**. Software is also called **program**. Different softwares are used to solve different problems. A computer works according to the instructions written in software.

The physical parts of the computer are called **hardware**. The user can see and touch hardware. Keyboard and mouse are examples of hardware.

Relationship of Software and Hardware

Software is a set of instructions that tells the computer hardware what to do. The hardware cannot perform any task without software. The software cannot be executed without hardware. A computer becomes useful only when hardware and software are combined.

Q. What is difference between software and hardware?

The difference between software and hardware is as follows:

Software	Hardware
1. Software is a set of instructions that tell a computer exactly what to do.	1. Hardware is physical parts of computer that cause processing of data.
2. Software cannot be executed without hardware.	2. Hardware cannot perform any task without software.
3. Software cannot be touched.	3. Hardware can be seen and touched.
4. Software is debugged in case of problem.	4. Hardware is repaired in case of problem.
5. Software is reinstalled if the problem is not solved.	5. Hardware is replaced if the problem is not solved.

Q. What is data? Give its example.

A collection of raw facts and figures is called **data**. The word **raw** means that the facts are unprocessed. Data is given to the computer for processing. Data is collected from different sources. It is collected for different purposes. Data may consist of numbers, characters, symbols or pictures etc.

Example

Students fill an admission form when they get admission in college. The form consists of raw facts about the students. These raw facts are student's name, father name, address etc. The purpose of collecting this data is to maintain the records of the students during their study period in the college.

Q. What is information? Give its example.

The processed data is called **information**. Information is an organized and processed form of data. It is more meaningful than data. It is used for making important decisions. Data can be processed in different ways to produce the required information.

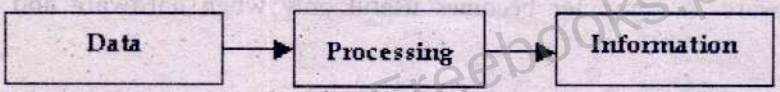
Example

Data collected from census is used to generate different types of information. The government can use it to determine the literacy rate in the country. Government can use the information in important decisions to improve literacy rate.

Q. What is data processing? Explain with example.

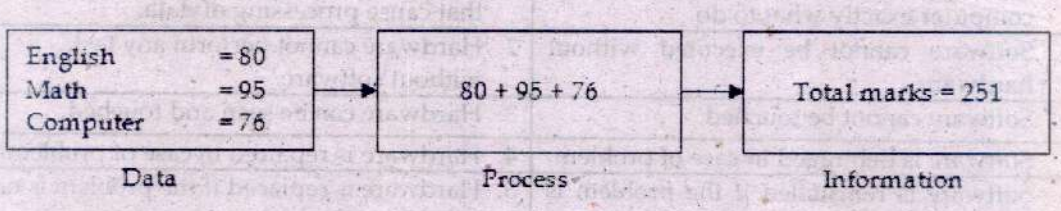
The process of converting data into information is called **data processing**. Data is the input and information is the output of a data processing system. It is also known as **computing**. Data processing consists of different steps that are performed in a sequence. The basic steps of data processing are as follows:

- Input
- Processing
- Output



Example

The addition process can be performed on the marks obtained by a student in different subjects. This process adds the marks and provides total marks. In this process, the marks in different subjects is data and the total marks is information.



Q. What is computer? Discuss primary components of a computer system.

A computer is a machine that can be programmed to accept data, process data into useful information and store it for later use. A computer consists of hardware and software. The **machine** is known as **hardware**. The **programs** are called **software**. The processing of input to output is directed by the software but performed by the hardware.

A computer system requires different components to perform the functions of input, processing, output and storage. These components are as follows:

1. Input Devices

The data that is given to the computer is called **input**. Input devices are used to input data and instructions into the computer. These devices send this data to the processing unit. Most commonly used input devices are keyboard and mouse.

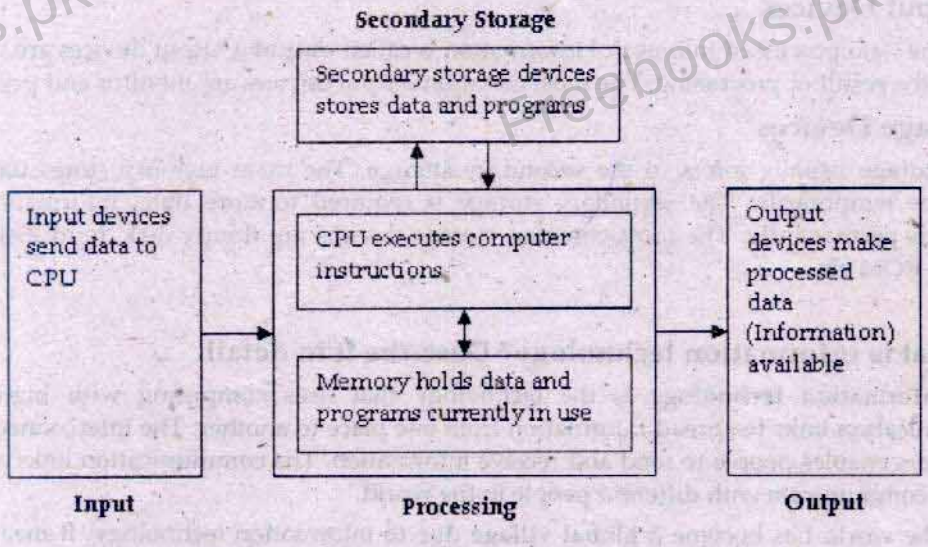
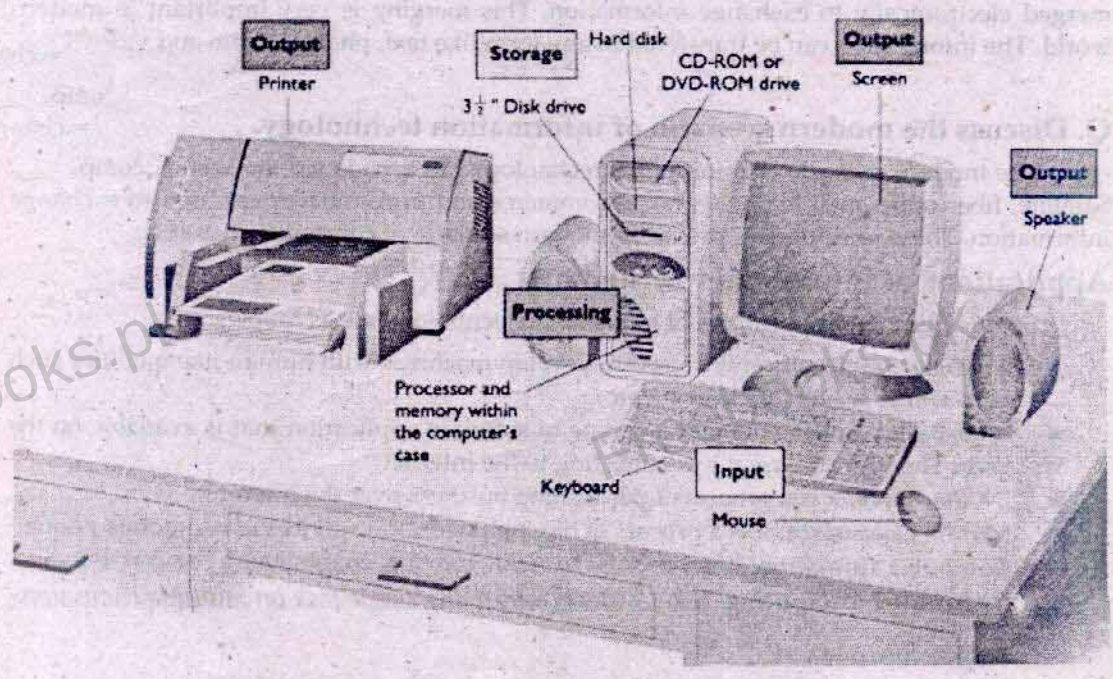


Figure: Generalized Computer Environment

2. Processing Device

The processor is used to process data. It is also called **central processing unit (CPU)**. It is the brain of the computer. It consists of electronic circuit. CPU interprets and executes program instructions. All computers must have a central processing unit.

Main memory is used to store the input data before processing. It also stores processed data after processing until the data is sent to the output device. The main memory is closely connected to CPU but it is separate from it.



3. Output Devices

The data processed into useful information is called **output**. Output devices are used to display the result of processing. The most common output devices are monitor and printer.

4. Storage Devices

Storage usually refers to the **secondary storage**. The main memory stores data and programs temporarily. The secondary storage is required to store data, information and programs permanently. The most common storage devices are floppy disk, hard disk drive and CD-ROM etc.

Q. What is information technology? Describe it in detail.

Information technology is the technology that uses computing with high-speed communication links to spread information from one place to another. The interconnection of computers enables people to send and receive information. The communication links are also used to communicate with different people in the world.

The world has become a **global village** due to information technology. It means that people living in the world know one another as if they are living in a village. It has become possible due to fast communication links. Information can be transferred from one place to another place easily and quickly.

Information plays an important role in every field of life. Information can be used to improve the standard of life. It can also be used for solving different problems. For example, if a person has the latest information about medical field, he can use this information to cure different diseases.

Information technology has enabled different types of institutions and organizations to be a part of **digital convergence**. The digital convergence means that various industries have merged electronically to exchange information. This merging is very important in modern world. The information can be transfered in any form like text, photos, audio and video etc.

Q. Discuss the modern scenario of information technology.

The modern scenario of information technology has broadened the base of computing. Satellite, fiber optic, mobile phone, fax, e-commerce and m-commerce are used to exchange information. These technologies provide a modern scenario of computer utilization.

Applications of Information Technology

Some important applications of information technology are as follows:

- **Artificial Intelligence:** It is used to develop machines with human-like qualities such as learning, seeing and hearing etc.
- **Web-Based Applications:** It is a type of software application that is available on the Web. The user can use it by connecting to the Internet.
- **E-Commerce:** It is a process of performing business over the Internet.
- **Mobile Commerce:** It is a process of buying goods and services using mobile phone.
- **Computer animation:** It is a process to create moving images using computers.
- **Distributed Computing:** It is a process of running single task on multiple computers.

- **Multimedia & Hypermedia:** Multimedia is a collection of graphics, animation, audio and video presented by computer. Hypermedia is a process of creating links to files that contain photographs, audio, video and text etc.

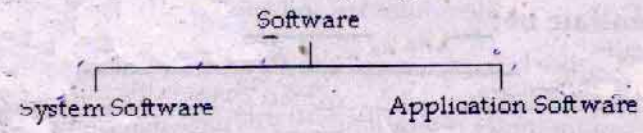
Q. What is software? Describe different categories / types of software.

Software

A set of instructions given to the computer to solve a problem is called **software**. Software is also called **program**. Different softwares are used to solve different problems. A computer works according to the instructions written in software.

Types of Software

Software can be divided into the following categories:



1. System Software

System software is set of programs to control and manage the operations of a computer hardware. It controls the usage and allocation of different hardware components. It enables application programs to execute properly. It controls the basic operations as follows:

- Saving data on disk
- Making computer to work for us
- Printing a document etc.

Examples of System Software

Some examples of system software are as follows:

- Operating System
- Utility Programs
- Device Drivers

2. Application Software

Application software is used to perform various applications on the computer. It helps a computer user to perform specific tasks. People use application software according to their needs. It is also known as **application package**.

Categories of Application Software

The main categories of application software are as follows:

a) Customized Software

Customized software is a type of application software that is designed for a particular customer or organization. It is developed to meet the exact requirements of a particular customer or organization. A customized software can be developed by single programmer or a team of programmers. The cost of customized software is more than packaged software.

Example

A software developed for a particular university is an example of customized software.

b) Package Software

Package software is a type of application software that is developed for sale to the general public. It is also known as **off-the-shelf** software. It enables the people to perform daily activities. Package software is normally developed by expert programmers.

Examples

- Word processor such as MS Word.
- Spreadsheet such as MS Excel and Lotus 123 etc.
- Database software such as MS Access and Oracle etc.
- Graphics software such as CorelDraw and Adobe Photoshop etc.

Q. Differentiate between system software and application software.

The difference between system software and application software is as follows:

System Software	Application Software
1. It is general-purpose software.	1. It is specific purpose software.
2. It is used to manage computer resources.	2. It is used to solve particular problems.
3. It executes all the time in computer.	3. It executes as and when required.
4. The number of system software is less than application software.	4. The number of application software is much more than system software.
5. System software is essential for a computer to work.	5. Application software is not essential for a computer to work.

Q. What is input? What is the use of input devices? List out different types of input devices.

Input

Anything given to the computer is known as **input** such as data or instructions. There are two methods of entering data and instructions into the computer:

1. Direct Input

In this method, data goes directly to the computer from the **source**. For example, a speech enters into the computer directly through microphone. The devices used for direct input are called **source data input devices**. Scanning devices, digital camera and microphone are examples of source data input devices.

2. Indirect Input

In this method, some intermediate handling is required to enter data. The data entered in computer through keyboard or mouse are examples of indirect input.

Input Devices

An **input device** is a hardware component that is used to enter data and instructions into a computer. Input devices take data and instructions from the user and convert it in a form that is understandable by the computer. There are three general types of input devices:

- Keyboards
- Pointing Devices
- Source data-entry devices

Q. What is keyboard? Describe enhanced keyboard and its segments.

Keyboard

Keyboard is the most commonly used input device. Data is mostly entered using a keyboard. The buttons on the keyboard are called **keys**. A standard keyboard contains over 100 keys. A keyboard contains numeric keys, alphabetic keys, function keys and special-purpose keys. A standard keyboard is normally called **QWERTY** keyboard. This is because the first six keys on the top row of letters on these keyboards are Q,W,E,R,T,Y.

Main Parts of Keyboard

The keyboard in most personal computers have the following main parts:

1. Function Keys
2. Main Keyboard (in the center)
3. Numeric Keys (to the right)
4. Additional Keys

1. Function Keys

Function keys from F1 to F12 are used to perform special functions. Their function depend on the software being used in the computer.

2. Main Keyboard

The main keyboard includes the keys found on a typewriter keypad. It also contains some special keys. The special keys have different uses and effects that depend on the software being used.

101-Key Enhanced Keyboard

101-key enhanced keyboard has some additional keys between the main keypad and the numeric keys. It also contains status lights in upper-right corner.

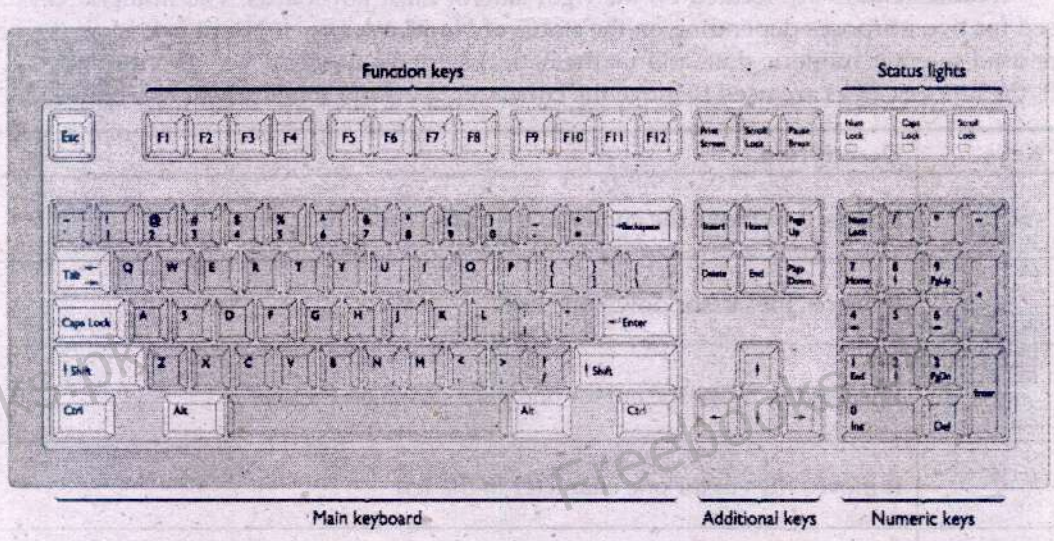


Figure: 101-key Enhanced keyboard

a) Esc Key

ESC key is used to terminate a command or current task.

b) CapsLock Key

CapsLock is a toggle key. The characters appear in uppercase if it is pressed. The characters appear in lowercase if it is not pressed. Numbers and symbols are not affected. The status light under "CapsLock" turns on when it is pressed.

c) Tab Key

Tab key is used to move the cursor to next tab stop.

d) Shift Keys

Shift key is pressed in combination with other keys to produce upper case letters and the upper symbols shown on certain keys.

e) Control Keys

Control key is pressed in combination with other keys to execute commands. For example, **CTRL+O** is used to open a new file.

f) Alt Keys

ALT key is also used in combination with other keys to execute commands.

g) Backspace Key

Backspace key is used to delete single character on the left of the cursor.

h) Enter Key

Enter key is used to move the cursor to the beginning of the next line. It is normally used at the end of a paragraph.

3. Numeric Keys

Numeric keys are located on the right side of most keyboards. The numeric keys are used for two purposes depending on the status of **NumLock** key. If **NumLock** is on, the keys are used to enter numeric data and mathematical symbols like +, -, *, /. If **NumLock** key is off, the numeric keys are used to move the cursor and perform other functions as follows:

Keys	Description
1 End	It is used to move the cursor to the right corner of screen.
2 ↓	It moves the cursor down one line.
3 PgDn	It is used to move the cursor one page down on the screen.
4 ←	It moves the cursor one character to the left.
6 →	It moves the cursor one character to the right.
7 Home	It is normally used in word processing or text editors to move the cursor to the top of the screen.

8 ↑	It moves the cursor one line up.
9 PgUp	It is used to move the cursor one page up on the screen.
0 Ins	It is used to switch between Insert Mode and Overtype Mode. It is a toggle key.
Del	It deletes characters to the right of cursor. It is also used to delete files.

4. Additional Keys

Some additional keys on extended keyboard are as follows:

- **Arrow Keys:** The arrows keys are used to move the cursor position.
- **Insert, Delete, Home, End, Page up and Page Down Keys:** These keys are above the arrows key. The functions of these keys are same as numeric keys 0, decimal point (del), 7, 1, 9 and 3.
- **Print Screen:** It is used to take a snap of the computer screen.
- **Scroll Lock:** It locks and unlocks the cursor on screen in some programs. The cursor moves normally when it is turned off. It does not work in all programs.
- **Pause or Break Key:** It is used to pause screen when information is too fast to read.

Q. What are pointing devices? List the names of different pointing devices.

Pointing Devices

An input device used to control a pointer on the screen is called **pointing device**. A pointer is a small symbol that appears on the screen in graphical user interface.

Some important pointing devices are as follows:

- Mouse
- Touch Pad
- Digitizer/Graphic Tablet
- Trackball
- Touch Screen
- Joystick
- Pointing Stick
- Light Pen
- Pen-based System

Q. What is mouse? Describe its functions.

Mouse is the most widely used pointing device. It is a small and lightweight input device. Mouse is moved on a flat surface to control the movement of the **cursor** or pointer on a screen. It is attached to the computer by a cable or wireless connection. Mouse is very easy to use. It is mostly used in graphics applications.

A mouse usually has two or three buttons. These buttons are used to perform different tasks. It may also include a scoll wheel to scroll through long documents. The mouse contains a small ball at the bottom. The movement of the cursor depends on the movement of ball.

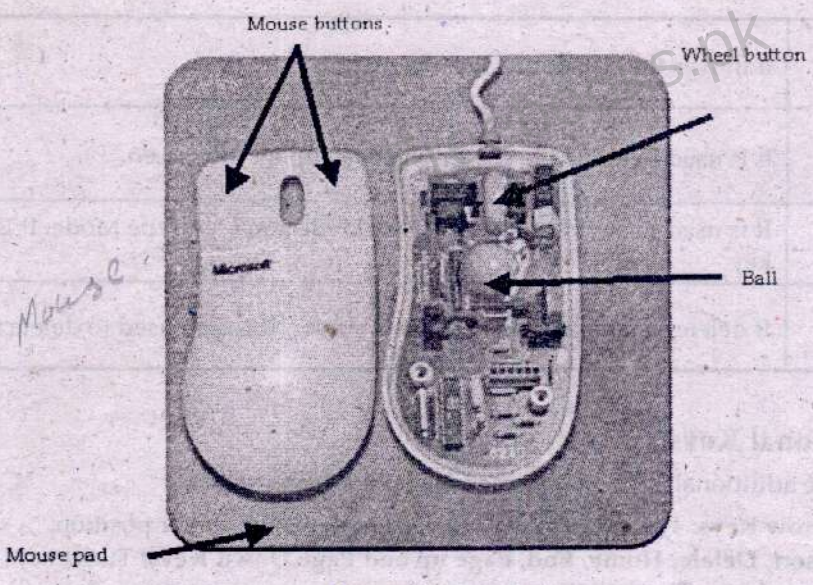


Figure: Mouse

Q. Briefly describe track ball.

A trackball can be used as an alternative to a mouse. This device has buttons similar to those on mouse. It has a large rotating ball on the top. The body of the track ball is not moved. The ball is rolled with fingers. The position of the cursor on the screen is controlled by rotating the ball.

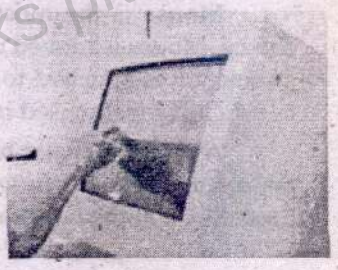
An advantage of the trackball is that it takes less space to move than mouse. Trackball is often included in laptop computers. It can also be used as separate input devices with standard desktop computers.

Q. What is the purpose of touch pad / track pad?

A **touch pad** is a small, flat surface over which the user moves his finger. The movement of the finger moves the cursor on the screen. It is also known as **track pad**.

A touch pad also has one or more buttons near it. These buttons work like mouse buttons. Touch pads are commonly used with notebook computers.

Q. Describe touch screen.

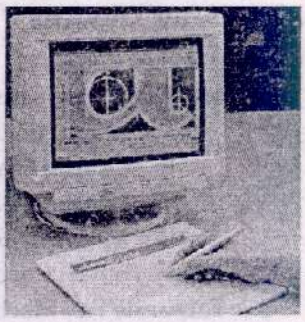


Touch screen is a video display screen that receives input from the touch of finger. The screen is covered with a plastic layer. There are invisible beams of infrared light behind the screen. The user enters data by touching icons or menus on the screen. Most touch screen computers use sensors to detect touch of a finger. Touch screen is commonly used in ATM, departmental stores and supermarkets.

Q. Briefly explain pointing stick.

Pointing stick is a pressure-sensitive device. It is similar to a pencil eraser and exists between keys on the keyboard. The pointer on the screen moves when the user pushes the pointing stick. It requires no additional space or cleaning like mouse. Pointing stick is normally used with notebook computers.

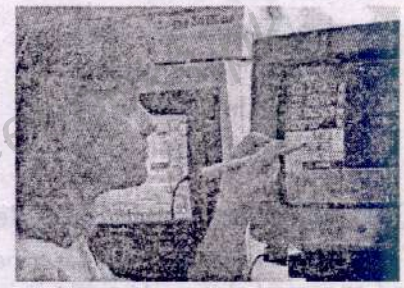
Q. What is digitizer/graphics tablet?



A **graphics tablet** consists of a flat pad connected to a stylus or puck by wire. A **stylus** is a pen-like device used to create sketches and images. A **puck** is a copying device used to copy an image. A puck looks like a mouse. The puck is specially used to trace a drawing and store it in the computer in digital form.

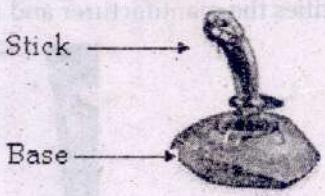
A designer can produce very accurate drawings using graphics tablet. Graphic tablets are often used to make maps and engineering drawings.

Q. Briefly describe light pen.



A **light pen** is a hand held pointing device. It looks like a pen. It is connected by a wire to the computer. The pen sends information to the computer when user touches the pen on specific areas of a specially designed screen. Light pen is usually used by engineers and graphic designers etc.

Q. Explain the purpose of joystick.



A **joystick** consists of a base and a stick. The stick can be moved in any direction to move an object around the computer screen. A joystick can perform a similar function to a mouse or trackball. But it is often considered less comfortable and efficient. The most common use of a joystick is for playing computer games.

Q. Describe the pen-based computer systems.

Pen-based system is used to enter handwriting and marks in computer using pen-like stylus. The user writes words and symbols on the screen. This system uses handwriting recognition software. The software translates handwritten characters into a form that can be stored and processed by computer. Many handheld computers have pen input. Pen-based systems are commonly used to input signatures or messages that are stored as images.

Q. What are source data-entry devices? List out different categories of these devices.

Source data entry devices are used for direct data entry to the computer system. These devices provide a quick and efficient way to input data.

Types of Source Data Entry Devices

The commonly used source data entry devices are as follows:

1. Scanning Devices

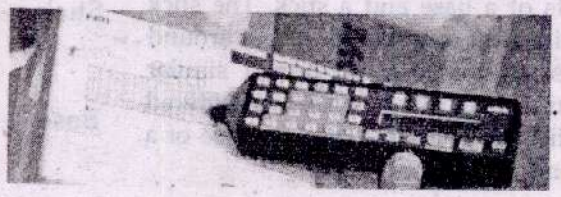
1. Barcode Reader
2. Mark and Character Recognition Devices
   - I. Magnetic-Ink Character Recognition Reader (MICR)
   - II. Optical Mark Recognition (OMR)
   - III. Optical Character Recognition (OCR)
   - IV. Magnetic Strip
   - V. Smart Cards
3. Facsimile Fax Machine
4. Imaging System

2. Audio/Video Devices

1. Audio Input Devices
2. Video Input Devices
3. Digital Camera

Q. Write a short note barcode reader.

Bar code reader uses laser beam to read bar codes. **Bar code** consists of vertical lines and spaces of different width. It is mostly found on different products in the market. This barcode system is called **Universal Product Code (UPC)**. The bar code represents data that identifies the manufacturer and the item.



Barcode readers read barcodes and translate them into digital signals. The digital signals are then further processed by computer.

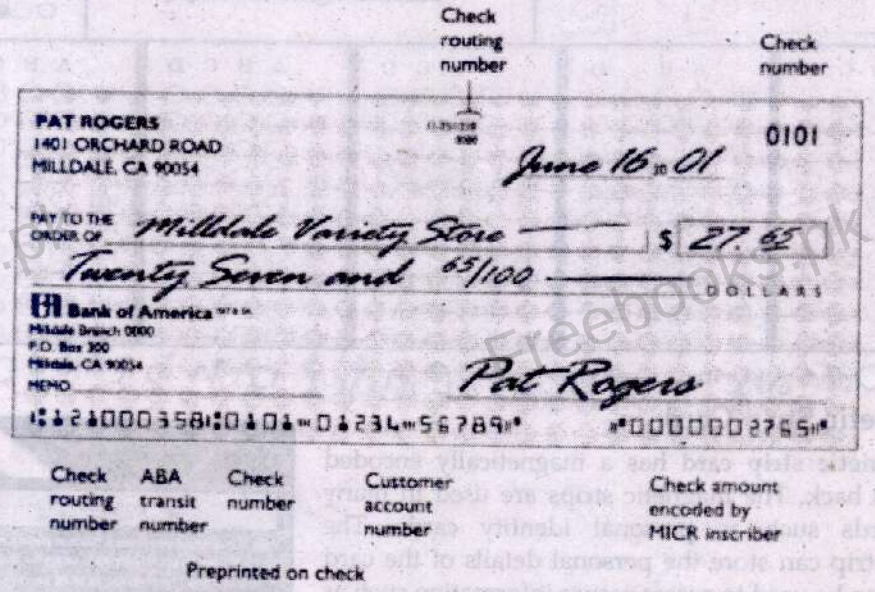
Q. Describe the mark and character recognition devices.

Mark and character recognition devices are used to read information printed on paper. These devices convert this information into a form that can be processed by the computer.

Some important devices are as follows:

i. MICR

MICR stands for **Magnetic-Ink Character Recognition Reader.** It is used to read text printed with magnetized ink. It is used by bank for check processing. Each check contains MICR characters at lower-left edge. These characters represent check number, bank number and account number.



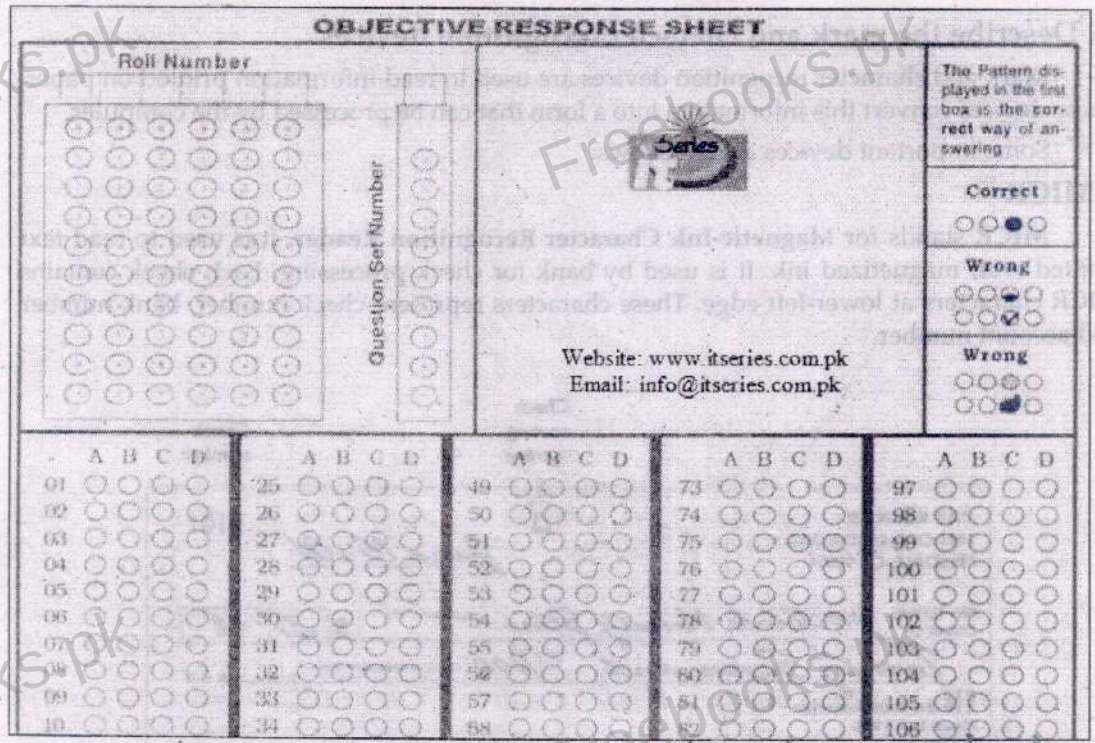
ii. OCR

OCR stands for **Optical Character Recognition.** It reads printed characters in particular font and converts them into digital code. Most OCR devices use a small optical scanner to read characters. OCR characters appear on utility bills and price tags in departmental stores.

iii. OMR

OMR stands for **Optical Mark Recognition.** It is also called **mark sensing device.** These devices use light beam to read data. The data is converted into digital signals. The signals are then sent to the computer for further processing.

An OMR device detects marks such as circles and rectangles on specially printed forms. It is often used in multiple choice test such **SAT** and **GRE**. The students answer the questions by filling the circles. The OMR device reads the answer sheet and evaluates it.



Database :- A Shared of related data is called Data base.

iv. Magnetic Strip Card

Magnetic strip card has a magnetically encoded data on its back. The magnetic strips are used in many plastic cards such as personal identity cards. The magnetic strip can store the personal details of the card owner. It can be used to access secure information such as bank account details etc.

v. Smart Cards

Smart card is similar to credit card or ATM card. It contains thin microprocessor and memory chip that is embedded in the card. The card is inserted into a specialized card reader. The card reader can read and update its contents. **Mobile SIM** card and **ATM card** are two examples of smart cards.

Q. What is facsimile fax machine? Explain its types.

Facsimile fax machine transmits and receives documents over telephone line. The document may contain text, images or hand-written contents. Fax machine at sending side scans the document. It converts it into digital form and then transmits. The fax machine at receiving side converts this digital form into its original form and prints it.

Types of Fax Machines

There are two types of fax machines:

1. Dedicated Fax Machine

It is a normal fax machine. It can send information to another fax machine. It can also receive information from another fax machine.

2. Fax Modem

It is a circuit board inside the system unit. It can send and receive information to and from another computer. It can also send information to a fax machine.

Q. Explain the function of imaging system.

Image scanner is also called **graphic scanner**. It is used to convert text, drawing and photographs into digital form and store it in computer system.

The image scanner scans color or black & white image with light. It then breaks the image into light and dark dots or color dots. Finally, it converts them to digital form. It is also called raster graphics. **Raster graphics** is a technique to represent image as matrix of dots.

Q. Discuss different audio and video input devices.

Different audio and video input devices are as follows:

Audio Input

The process of entering any sound into the computer is called **audio input**. It may include speech and music etc. Audio can be entered through microphone. Audio input devices record the analog sound and convert it into digital form for further processing. The main use of audio input devices is to provide digital input for multimedia computers.

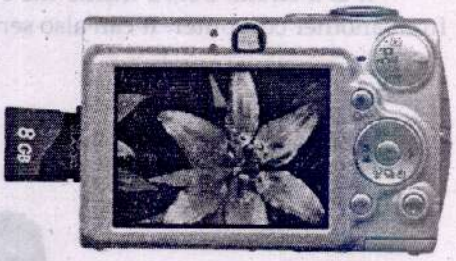
Video Input

The process of entering full-motion recording into a computer is called **video input** or **video capture**. Video can be entered from an analog device like VCR. The analog signals of video must be converted into digital form before storing it in the computer. An expansion card converts the analog video signal into digital signal. It is known as **video capture card**.

Two types of video card are as follows:

- **Frame-grabber video card:** It can capture and convert a single video frame at a time into digital form. An image of a video at a specific time is called **frame**.
- **Full motion video card:** It is also called **adapters**. It can convert analog to digital signal at the rate of up to 30 frames per second. It gives the effect of a motion picture.

Q. Write a short note on digital camera.



Digital camera is an input device. It stores images digitally in its memory rather than recording on film. The pictures taken with a digital camera can be transferred to a computer system. Many digital cameras allow the user to edit the images. The number of digital photos depends on the amount of memory in camera. The main advantage of digital cameras is that making photos is inexpensive and fast. It does not require any film processing.

Most digital cameras store images in internal flash memory. They can also store additional images on mobile storage media like flash memory cards, memory sticks and mini disks etc.

Q. What is output? What are different types of output? Name different types of output devices.

Output

The data that has been processed into useful information is called **output**. The output is of two types:

- **Soft Copy Output:** The output shown on display screen is called **softcopy output**. Softcopy output is not tangible. It means that it cannot be touched.
- **Hard Copy Output:** The output printed on paper is called **hardcopy output**. The common devices to produce hardcopy output are printers and plotters.

Output Devices

The hardware components that are used to receive information from the computer are called **output devices**. Output devices take information from the computer and convert it in a form that is understandable by the users.

Examples

Some important output devices are as follows:

- Monitors
- Printers
- Plotters
- Speakers

Q. What is difference between soft copy and hard copy?

The difference between soft copy and hard copy is as follows:

Soft Copy	Hard Copy
1. Soft copy is in electronic form.	1. Hard copy is in printed form.
2. It is easier to modify.	2. It is difficult to modify.
3. It is intangible.	3. It is tangible.
4. It is stored on storage devices.	4. It is printed on papers.
5. Its duplicate copies can be produced without any cost.	5. Its duplicate copies can be produced with cost.

Q. What is difference between input and output devices?

The difference between input and output devices is as follows:

Input Devices	Output Devices
1. Input devices give data and instructions to the computer.	1. Output devices get information from the computer.
2. Input devices take data and instructions from the user and convert it in a form that is understandable by the computer.	2. Output devices take information from the computer and convert it in a form that is understandable by the users.
3. Examples of input devices are keyboard and mouse.	3. Examples of output devices are monitor and printer.

Q. What are display screens? What features distinguish one display screen from another?

Display Screen

A display screen is also known as monitor or simply screen. It is the most common output device. It is used to display soft copy output. There are different types of display screens. Different display screens can be distinguished on the basis of the following features:

1. Size

Monitors are available in different sizes. The size of monitor for personal computers is from 14 to 21 inches. The size of the monitor is measured diagonally.

2. Color

The display screens can be either **monochrome** or **color**. The color display screens display output in multiple colors. The RGB display screens can create 256 colors and thousands of variations of these colors. RGB stands for Red, Green and Blue.

The monochrom display screens display output in single color. Monochrome display screens show images in a single color usually white, green, blue, red or amber. However, monochrome monitor can display different shades of one color.

3. Resolution

All characters and images on the display screen are made of pixels or dots. **Resolution** of a monitor is the number of pixels on the screen. It is the image sharpness of a display screen. High number of pixels means sharper image.

4. Video Display Adapters

A display screen must have a video display adapter attached with the computer to display graphics. It is also called **video graphics card**. It is a circuit board that determines the following things:

- Resolution
- Number of colors
- Speed with which images appear on the display screen

Q. Discuss different types of graphics cards.

There are three types of graphics cards:

1. VGA

VGA stands for **Video Graphics Array**. It supports 16 to 256 colors depending on screen resolution. It supports 16 colors at 320x200 pixels. It supports 256 colors at 640x840 pixels. It is called 4-bit color.

2. SVGA

SVGA stands for **Super Video Graphics Array**. It supports 256 colors at higher resolution then VGA. It has two graphics modes. These are 800x600 pixels and 1024x768 pixels. It is called 8-bit color. SVGA is the most common standard used today. It is used primarily with 15-inch monitors.

3. XGA

XGA stands for **Extended Graphics Array**. It supports up to 16.7 million colors at a resolution of 1024x768 pixels. It is called 24-bit color or true color. It is used with 17 and 19 inch monitors.

Q. Discuss different types of display screens.

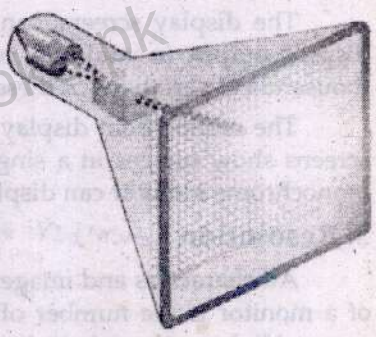
Display screen are of two types. These are as follows:

1. CRT Monitor

CRT monitor is the most common form of display screen. It looks like a television. It can display text and graphics.

Working of CRT Monitor

It uses a **Cathode Ray Tube (CRT)** to display an image on the screen. CRT consists of one or more guns that fire a beam of electrons inside the screen. The screen is coated with tiny phosphor dots from inside. The beam of electrons repeatedly falls on the surface of screen. Every beam-fall takes only a fraction of a second.



CRT in color monitors consists of three guns. These guns generate red, green and blue (RGB) colors. The other colors are generated with the combination of these three colors.

2. Flat Panel Display

Flat-panel monitors take less space and are lightweight. These monitors use much less power than CRTs. Notebook computers use flat panel monitors. Flat panel display is made up of two plates of glass. These plates contain a substance between them. The substance is activated in different ways.

There are three types of technologies used in flat panel display screens:

i. Liquid Crystal Display (LCD)

This type of display screen contains a substance called **liquid crystal**. The molecules of this substance line up in such a way that the light behind the screens blocked or allowed to create an image.

ii. Electro Luminescent Display (ELD)

This type of display screen contains a substance that glows when it is charged by electric current.

iii. Gas Plasma Display

This type of display screen is similar to neon bulb. The display uses a gas that emits light in the presence of an electric current. It is more expensive technology. It is not commonly used.

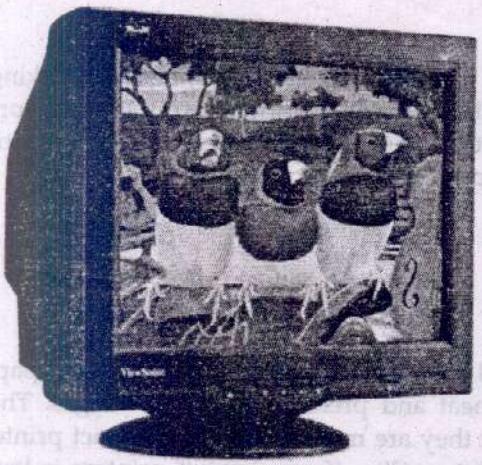


Figure: CRT monitor

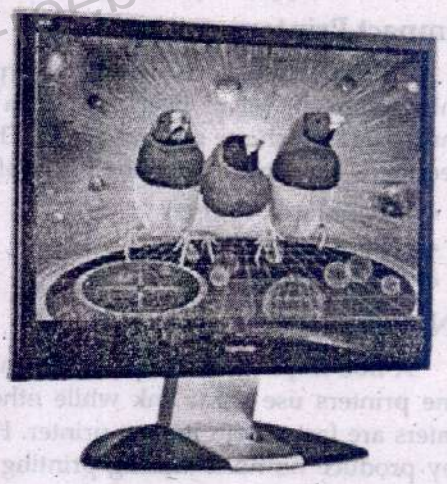


Figure: LCD monitor

Advantages of Flat Panel Display over CRT

The advantages of flat panel display over CRT are as follows:

- It takes less desk space.
- It uses less energy than CRT monitor.
- It uses liquid crystal technology.
- Its weight is less than CRT.
- It is used for notebook computers, PDAs, cellular phones and personal computers.
- It does not emit harmful radiation.

Q. Differentiate between CRT and LCD monitors.

The difference between CRT and LCD monitors is as follows:

CRT	LCD Monitor
1. It is less expensive than a LCD monitor.	1. It is more expensive than a CRT monitor.
2. It takes more desk space.	2. It takes less desk space.
3. It uses more energy than LCD monitor.	3. It uses less energy than CRT monitor.
4. It uses picture tube technology.	4. It uses liquid crystal technology.
5. Its weight is more than LCD.	5. Its weight is less than CRT.
6. It is used for personal computers.	6. It is used for notebook computers, PDAs, cellular phones and personal computers.
7. It emits harmful radiation.	7. It does not emit harmful radiation.

Q. What is printer? Discuss different types of printers.

A printer is an output device that prints characters, symbols and graphics on paper. The printed output is called **hard copy**. Print resolution is commonly measured in **dots per inch (dpi)**. The printers with higher **dpi** produce higher quality output.

Types of Printers

Different types of printers are as follows:

1. Impact Printers

An **impact printer** works like a typewriter. It prints characters or images by striking a print hammer or set of pins against an inked ribbon. Impact printers are the oldest print technologies which are still produced. The impact printers are used where low-cost printing is required. Three most common forms of impact printers are as follows:

- Dot Matrix Printers
- Daisy Wheel Printer
- Line Printer

2. Non-Impact Printers

A **non-impact printer** prints characters and graphics on paper without striking paper. Some printers use spray ink while others use heat and pressure to create images. These printers are faster than impact printer. However, they are more costly than impact printers. They produce no noise during printing. The print quality of non-impact printers is better than impact printers.

Different kinds of non-impact printers are as follows:

- Laser Printer
- Inkjet Printer
- Thermal Printer

Q. What is impact printer? Discuss different types of impact printers.

Impact Printers

An **impact printer** works like a typewriter. It prints characters or images by striking a print hammer or wheel against an inked ribbon.

Types of Impact Printers

Different types of impact printers are as follows:

- Dot Matrix Printer
- Daisy Wheel Printer
- Line Printer

1. Dot Matrix Printer

A **dot matrix** printer is an impact printer. It produces printed images when tiny pins on a print head strike an inked ribbon. When the ribbon presses against the paper, it creates dots that form characters and graphics. The print head on a dot matrix printer can contain 9 or 24 pins. This number of pins depends on the manufacture and the printer model. A higher number of pins print more dots that produce higher quality.

The speed of dot matrix printer is measured by the number characters printed in one second. The speed of most dot matrix printers ranges from 350 to 1100 **characters per second (cps)**. Dot matrix printer do not provide high quality output. They produce a lot of noise while printing. The printing cost of these printers is very cheap.

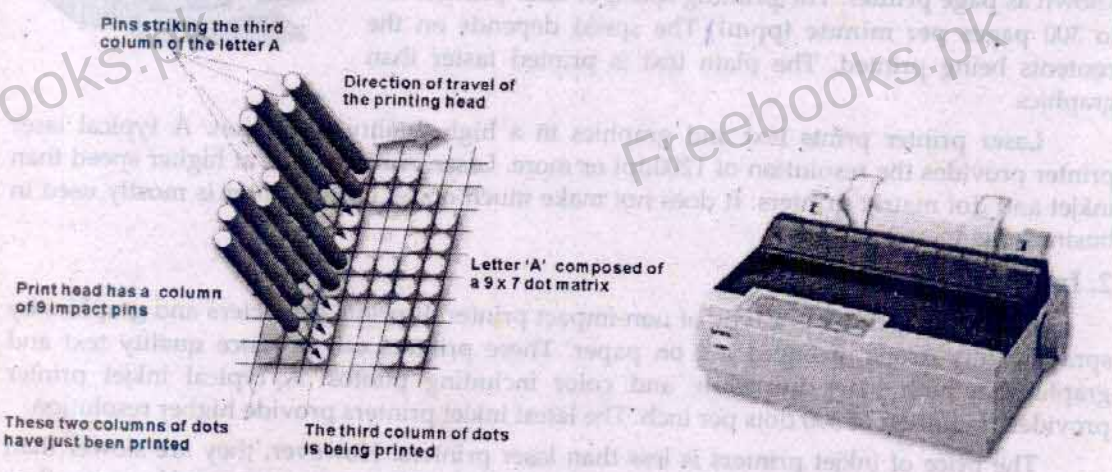
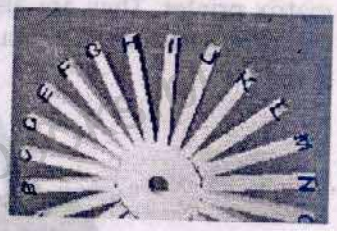


Figure: Dot-matrix printer

2. Daisy Wheel Printer

Daisy wheel printer is similar to a typewriter. It uses a **print wheel**. The print wheel is called **daisy wheel**. Each petal of daisy wheel contains character. A motor rotates the wheel. A hammer strikes a petal against the ribbon when the desired character reaches the position on the paper. This prints the character on the paper. Daisy wheel printer is slower than dot matrix printer but better in quality.



3. Line Printer

Line printer is a fast impact printer. It prints an entire line at a time. Its speed is measured in **lines per minute (lpm)**. Many line printers can print 3000 lines per minute. Two types of line printers are **band printer** and **chain printer**. It is normally used by mainframe and microcomputers.

Q. What is non-impact printer? Discuss its different types.

A **non-impact printer** prints characters and graphics on a piece of paper without striking the paper. Some of these printers use spray ink while others use heat and pressure to create images. These printers are faster than impact printer.

Types of Non-impact Printers

Different types of non-impact printers are as follows:

1. Laser Printer
2. Inkjet Printer
3. Thermal Printer

1. Laser Printer

LASER stands for **Light Amplification by Stimulated Emission of Radiation**. The **laser printer** is a non-impact printer. Its working is similar to photocopying machine. It uses laser beams to burn special powder on page to create a permanent image. The power is contained in **toner**.

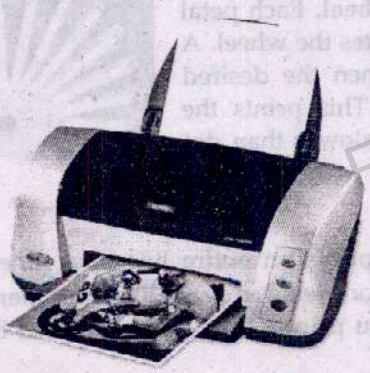
Laser printer prints complete page at a time. It is also known as **page printer**. The printing speed of laser printers is 5 to 300 **pages per minute (ppm)**. The speed depends on the contents being printed. The plain text is printed faster than graphics.

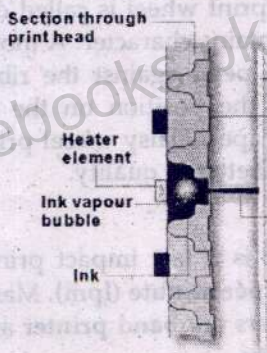
Laser printer prints text and graphics in a high quality resolution. A typical laser printer provides the resolution of 1200dpi or more. Laser printer prints at higher speed than inkjet and dot matrix printers. It does not make much noise. Laser printer is mostly used in business field.

2. Inkjet Printer

An **ink-jet printer** is a type of non-impact printer. It prints characters and graphics by spraying tiny drops of liquid ink on paper. These printers can produce quality text and graphics in both black-and-white and color including photos. A typical inkjet printer provides resolution of 300 dots per inch. The latest inkjet printers provide higher resolution.

The price of inkjet printers is less than laser printers. However, they are slower than laser printers. Most inkjet printers can print from 10 to 35 pages per minute. However, they print graphics and colors at slower rate. The print quality of inkjet printers is higher than dot matrix printer. They are also comparatively inexpensive. Most inkjet printers usually have two print cartridges. One cartridge contains black ink and the other contains color.





3. Thermal Printer

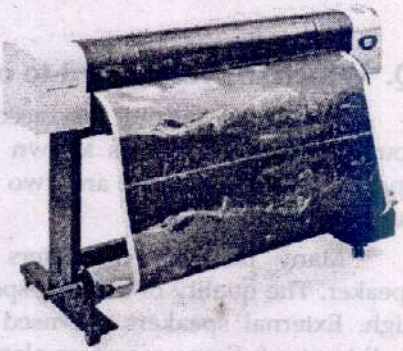
Thermal printer uses color waxes and heat to produce images on special paper. The color wax sheets are not required for black-and-white output. Thermal printers are expensive and require costly paper. These printers are used to create the highest-quality color printing.

Q. What is difference between impact and non-impact printer?

The difference between impact and non-impact printer is as follows:

Impact Printer / Dot-Matrix Printer	Non impact Printer / Laser Printer
1. It prints characters or images by striking print hammer or wheel against an inked ribbon.	1. It prints characters and images without striking the papers.
2. Its speed is slower.	2. Its speed is faster.
3. Its printing quality is lower.	3. Its printing quality is higher.
4. It normally uses continuous paper sheet.	4. It normally uses individual paper sheet.
5. It generates noise during printing.	5. It does not generate noise during printing.
6. It uses inked ribbon for printing.	6. It uses toner or cartridge for printing.
7. It is less expensive.	7. It is more expensive.
8. Dot Matrix is an impact printer.	8. Laser printer is a non-impact printer.

Q. What is the usage of plotters? Explain different types of plotters.



A **plotter** is an output device that is used to produce high quality graphics in a variety of colors. Plotters are used to create maps, architectural drawings, graphs and charts.

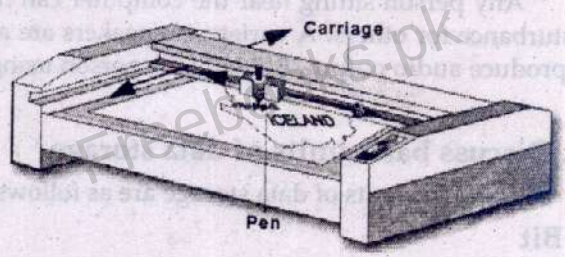
Types of Plotters

Different types of plotters are as follows:

- Flatbed Plotter
- Drum Plotter

1. Flatbed Plotter

Flatbed plotter is used to plot or draw images. It contains pens for drawing images. The paper is placed on table-like surface. Software instructs the pens to move down on the paper. The pen then moves on the paper for creating images. Most flatbed plotters have one or more pens of different colors and widths.



2. Drum plotter

Drum plotter uses a rotating drum or cylinder. The drawing pens are mounted on the drum. The pens move to the left and right as the drum rotates. This movement creates the desired image. The advantage of drum plotter is that the length of the plot is almost unlimited. The roll paper can be used to draw very lengthy images. The width of the image depends on the width of the drum.

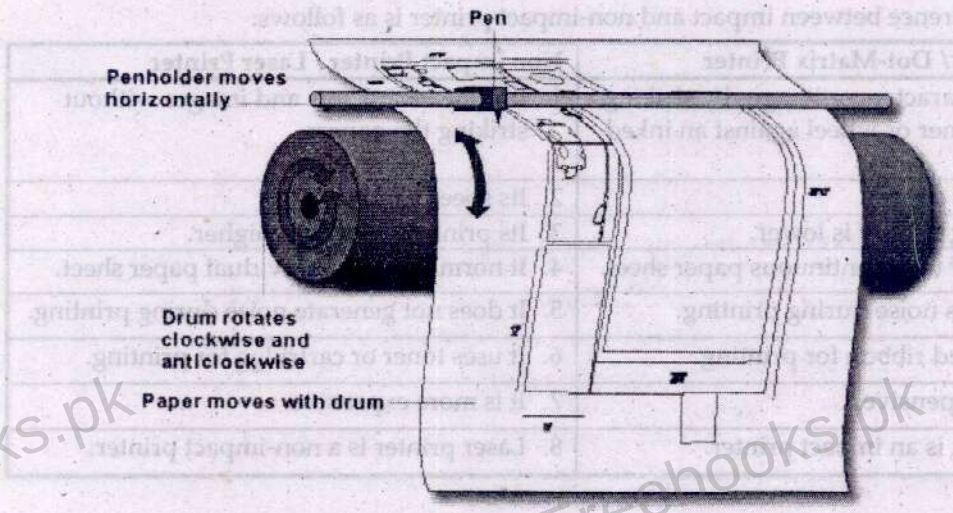


Figure: Drum Plotter

Q. Which device is used to output audio data from the computer?

A type of output produced in the form of sound, voice or music is known as **audio output**. Speakers and headsets are two commonly used audio output devices.

Many personal computers contain internal speaker. The quality of internal speakers is not very high. External speakers are used for high quality audio output. Some monitors also contain speakers on their sides.

Any person sitting near the computer can hear audio output of speaker. It may create disturbance for others. A variety of speakers are available in market. **Headsets** are also used to produce audio output. But only the person using headset can hear this sound.

Q. Discuss basic units of data storage.

The basic units of data storage are as follows:

1. Bit

Computer works with binary digits. These digits are in the form of 0's and 1's. A binary digit is called **bit**. One bit takes one storage location in memory. It is the smallest unit for data storage.

2. Byte

A collection of eight bits is called **byte**. It is used to store single character. The capacity of the memory or the storage is expressed in terms of bytes.

3. Kilobyte

A kilobyte consists of 1024 bytes. It is denoted by **KB**.

4. Megabyte

A megabyte consists of 1024 kilobytes. It is denoted by **MB**.

5. Gigabyte

A gigabyte consists of 1024 megabytes. It is denoted by **GB**.

6. Terabyte

A terabyte consists of 1024 gigabytes. It is denoted by **TB**.

The commonly used storage capacity terms are as follows:

Unit	Abbreviation	No. of bytes (approx)	No. of bytes
Kilobyte	K or KB	$(2)^{10}$	1024
Megabyte	M or MB	$(2)^{20}$	About one million
Gigabyte	G or GB	$(2)^{30}$	About one billion
Terabyte	T or TB	$(2)^{40}$	About one trillion

7. Word

A **computer word** is the number of bytes in common unit of data defined by the computer system. It is normally the size of a register. The length of a word is different in different computers. The larger word indicates more powerful computers.

The following tables indicates different word sizes:

No. of bytes	No. of bits	Era of computer
One byte	8	Very early personal computer
Two byte	16	Traditional micro-computer
Single Word	32	Mainframe, mini-computers and microcomputers
Double Word	64	Super computers and some micro computers

Q. Convert 240MB of memory in bytes and kilobytes.

Solution

Number of bytes in one MB $= (2)^{20}$

Total Number of bytes in 240MB $= 240 * 2^{20}$ bytes

Number of kilo-bytes in one MB $= 2^{10}$ KB $= 1024$ KB

Total Number of Kilo-bytes in 240 MB $= 240 * 1024$ KB

Q. Convert 60 GB of memory into words?

Solution

Number of bytes in one GB $= 2^{30}$

Number of bytes in 60GB = $60 * 2^{30}$
Number of words in 4 bytes = 1 W
Number of Words in 60 GB = $60/4 * 2^{30}$
= $15 * 2^{30}$ Words

Q. Define system and its components.

System

A **system** is a combination of different components that work with each other to perform specific tasks. Different procedures are used to perform different tasks in the system. A **procedure** is a set of steps performed in a regular and specified order to accomplish a task. For example, the registration of students is a procedure in an education system.

Components of System

Following are different components of an information system:

1. Hardware
2. Software
3. People / Users
4. Data / Information
5. Communication Setup

Q. What is SDLC? Discuss its different phases.

SDLC stands for **system development life cycle**. It is a set of different setps that are performed to develop a system. It is an organized way of developing successful systems. It consists of different phases. These phases are as follows:

1. Preliminary Investigation
2. System Analysis
3. System Design
4. System Coding
5. System Testing
6. System Implementation
7. System Maintenance

1. Preliminary Investigation

Preliminary investigation is the first phase. In this phase, the system is investigated. The objective of this phase is to conduct an initial analysis and findings of system as follows:

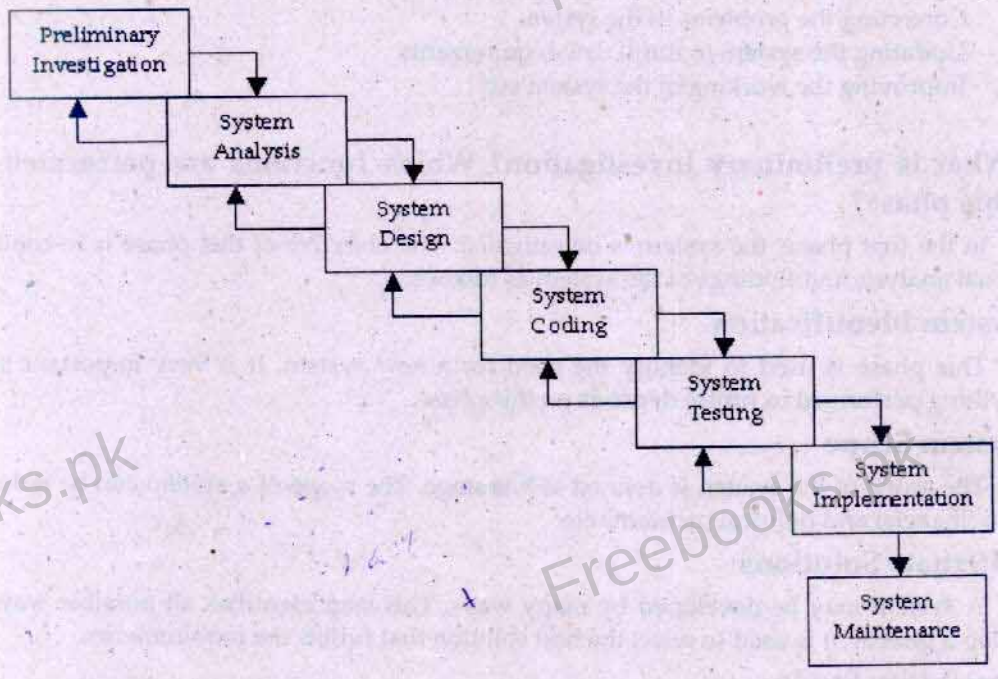
- System Identification
- System Scope
- Alternative Solutions
- Feasibility Study
- Preliminary Plan

2. System Analysis

In this phase, the current business system is studied in detail to find out how it works and how to improve it. The analyst conducts the following activities:

- Need Analysis

- Data Gathering
- Data Analysis
- Analysis Report



3. System Design

System design phase is used to design logical and physical model of new system. The system design states how new system will meet the requirement identified in analysis phase.

4. Coding

This phase consists of writing programs for the system. Single programmer or a team of programmers develops the system using different tools. This phase requires a lot of time, effort and budget to develop the complete system.

5. Testing

Complete testing of the system is very important. A system must be tested to detect and remove errors in it. The system is tested by giving sample data.

6. Implementation

Implementation consists of installing the hardware, software and files. A system can be implemented after it has been tested. It is also called **system conversion**. It can be performed in any of the following ways:

- Direct Implementation
- Parallel Implementation
- Phased Implementation
- Pilot Implementation

7. Maintenance

Maintenance is a process of checking the working of the system. It is very important to ensure that the system is fulfilling the objectives. Some measures may be taken to improve the system. Maintenance includes the following activities:

- Correcting the problems in the system
- Updating the system to fulfill new requirements
- Improving the working of the system etc.

Q. What is preliminary investigation? Which functions are performed in this phase?

In the first phase, the system is investigated. The objective of this phase is to conduct an initial analysis and findings of the system as follows:

1. System Identification

This phase is used to identify the need for a new system. It is very important step. Everything performed in future depends on this phase.

2. System Scope

The scope of the system is defined at this stage. The scope of a system can be reduced due to financial and political problems etc.

3. Alternate Solutions

A system may be developed by many ways. This step identifies all possible ways to develop a system. It is used to select the best solution that fulfills the requirements.

4. Feasibility Study

A system must be affordable and acceptable for the organization. A **feasibility study** is used to find whether the proposed system is feasible. This decision depends on different issues such as financial and time limits.

5. Preliminary Plan

Preliminary plan consists of all findings in written form for approval. It is also called **feasibility report**. It is normally submitted to the top managers of the organization. They may accept, modify or reject the report.

Q. Describe system analysis phase. Which activities are conducted in it?

In this phase, the current business system is studied in detail to find out how it works and how to improve it. The analyst conducts the following activities:

1. Need Analysis

Need analysis is also called **requirements analysis**. It consists of all requirements of the system from users and managers. The developed system must fulfill all these requirements determined in this step.

2. Data Gathering Techniques

Data gathering techniques are used to collect detailed information about system. These techniques are written documents, interviewing, questionnaries, observation and sampling.

a. Written Documents

The written documents of the current system are important source of information for the analyst. The analyst can study these documents to find out the problems in the system. The documents include reports, forms and business plans etc.

b. Interviewing

Interviewing is used to get information from managers and users by discussing the problems. The analyst asks questions to understand the problems in a system. The questions asked in interview must be simple and relevant.

c. Questionnaires

Questionnaires are used to collect information from a large number of people. It is very useful when interviews of many users cannot be conducted. It is also very simple and quick method of collecting information.

d. Observation

Observation is a process of watching the people while they are working. It helps the analyst to detect problems in the current system. It also enables the analyst to understand the working of the system more clearly.

e. Sampling

Sampling is a method of selecting users or units for getting information. A system in a large organization may involve many users. It is not possible to interact with all users. Sampling is very useful in such situation.

3. Data Analysis

Data analysis is a process of analyzing the data to obtain accurate information. Many tools are used for this purpose such as data flow diagram and flowcharts etc.

4. Analysis Report

Analysis report is produced at the end of system analysis. It is submitted to the top management for review. The report should consist of the following parts:

- It must explain the current system.
- It should explain the problems in the current system.
- It should describe the requirements and recommendations for new system.

Q. Briefly explain the system design phase.

System design phase is used to design the logical and physical model of new system. The system design states how the new system will meet the requirement identified in system analysis phase.

1. Logical Design

Logical design describes the general functional capabilities of new system. It reviews the system requirements and considers major system components. CASE tools and project management software are used in this step. Different tools are used to prepare logical design such as MS Project and Gantt chart etc.

2. Physical Design

Physical design describes how the proposed system will deliver the capabilities specified in the logical design. It specifies the following:

- Output requirements
- Storage requirements
- System control
- Input requirements
- Processing requirements
- Backup and Recovery procedures

3. Report

A detailed report is prepared at the end of design phase. It is also submitted to the higher management for approval.

Q. What is the importance of testing phase? How the system is tested?

Complete testing of the system is very important. A system must be tested to detect and remove errors in it. The system is tested by giving sample data.

A system can be tested in two stages:

1. Unit Testing

It is also known as **module testing**. In this stage, individual units or modules of the system are tested by using sample data.

2. System Testing

In this stage, all modules or units are combined to make a complete system. The complete system is then tested as a whole.

Q. Discuss different types of implementation of a system.

A system can be implemented after it has been tested. It is also known as **system conversion**. It can be performed in any of the following ways:

1. Parallel Conversion

A type of conversion in which both new and old systems operate together for a period of time is called **parallel conversion**. It is the safest type of conversion. The results of both systems are compared. The old system can be used until all problems in the new system are removed.

2. Pilot Conversion

In this type of conversion, one part of the organization uses the new system and the rest of the organization uses the old system. When one part of the organization is satisfied with the new system, the rest of the organization can start using it.

3. Phased Conversion

A type of conversion in which individual components of new system are implemented one by one is called **phased conversion**.

4. Direct Conversion

In this type of conversion, the old system is directly replaced by the new system. It is the most risky conversion. It may be necessary when time is very short. It is also called **crash conversion**.

Q. Describe the importance of user training to use a system.

The training of users is very important to run the new system successfully. The users must be trained properly to use the new system effectively. The users may also need manuals and reference information. **Computer-based training (CBT)** is popularly used for training the users.

Q. What are computer storage devices? List different types of storage devices commonly used in a computer.

Storage devices are used to store data and programs permanently. These devices are used to store large volume of data and program.

The main reasons for using these storage devices are as follows:

- Main memory of a computer system is not permanent. This means that data and programs are lost when computer is shut down or power is turned off. Storages devices store data permanently.
- The main memory of computer system has limited capacity. Storage devices can store a large amount of data.

Storage devices are also called **backing storage** devices, **secondary storage** devices or **auxiliary storage** devices. Following are the types of storage devices:

- Magnetic Disk
- Magnetic Tape
- Optical Disk

Q. What is magnetic tape? How is data stored on it?

Magnetic tape is an oldest storage media to store large amount of data permanently. Magnetic tape consists of a thin ribbon of plastic. The tape is coated with magnetic material. It is also called read/write device. It reads and writes data sequentially. So its speed is slower than other storage devices.

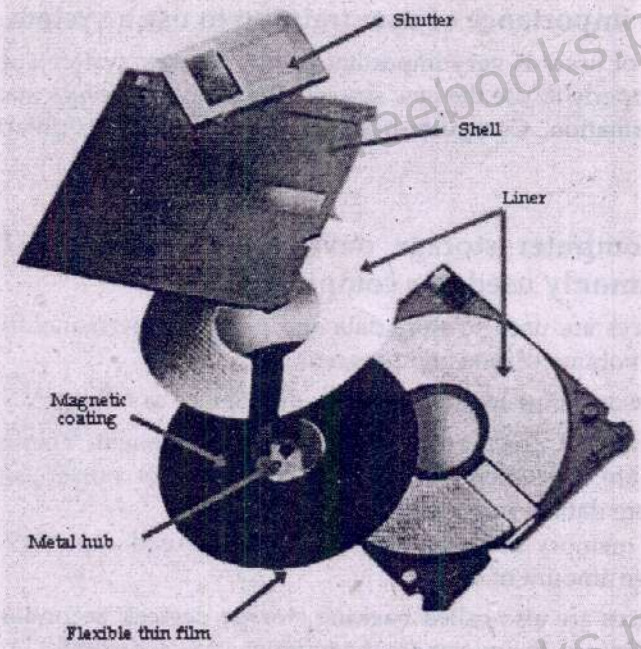
Q. Write a note on floppy disk.

Floppy disk is also called **diskette**. It consists of a thin plastic disk coated with magnetic material. This disk is enclosed in a plastic jacket. It was introduced by IBM in early 1970s. It is a portable storage medium and can be removed from one computer and inserted into another computer easily.

Floppy disk can only store a small amount of data. Data access speed of floppy disk is slower than hard disk. It is inexpensive storage media.

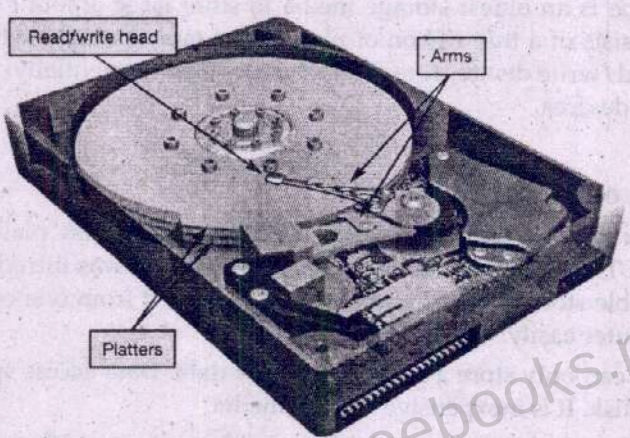
The standard size of floppy disk is 3 ½ inch. The capacity of floppy disk is 1.44MB. The circular piece of plastic on 3 ½ inch diskette is enclosed in a shell. A piece of metal covers the reading and writing area. It is called **shutter**. When the disk is inserted into a disk drive, the shutter opens to expose the surface of the disk.

The data stored on floppy disk can be read with **floppy disk drive**. The read/write head in floppy disk drive is used to read and write data on floppy disk.



Q. Write a note on hard disk.

Hard disk is a type of magnetic disk. A hard disk consists of several circular disks called **platters**. The platters are used to store data. A platter in a hard disk is coated with a magnetic material. The hard disk in most personal computers is fixed inside the system unit.



Characteristics of Hard Disk

Some important characteristics of hard disk are as follows:

- Hard disk provides large storage capacity. The capacity of computer hard disk is 1500GB and more.
- It is much faster than floppy disks.

- It is the primary media for storing data and programs.
- It is more reliable than floppy disk.
- Data stored on hard disk is safer than floppy disk.

Q. Write a short note on CD-ROM.

CD-ROM stands for **compact disk read-only memory**. The data stored on CD-ROM can only be read. It can cannot be deleted or changed. CD-ROM is a portable storage device. The data can be transferred from one computer to another easily by using CD-ROM. It can store about 700MB of data.

Uses of CD-ROM

- CR-ROM is mostly used to store large amounts of information like sound, color graphics and videos.
- It is often used to distribute new application software and games.

Advantages of CD-ROM

- It is the least expensive way to store large amounts of data and information.
- CD-ROM disks are durable and easy to handle.
- Information can be stored on CD-ROM for many years.

Disadvantages of CD-ROM

- The data cannot be edited.
- It retrieves data and information more slowly than magnetic disks.

Q. What is difference between diskette and hard disk?

The difference between diskette and hard disk is as follows:

	Diskette		Hard Disk
1.	Diskette contains a single flat piece of plastic coated with iron oxide.	1.	Hard disk contains one or more metal plats coated with iron oxide.
2.	It is small and portable.	2.	It is usually fixed and not portable.
3.	It is less expensive than hard disk.	3.	It is more expensive than diskette.
4.	It can store small amount of data.	4.	It can store large amount of data.
5.	Its data access speed is slower than hard disk.	5.	Its data access speed is faster than diskette.
6.	Data stored on diskette is less safe than hard disk.	6.	Data stored on hard disk is safer than diskette.
7.	It can be damaged easily due to dust and heat.	7.	It cannot be damaged easily due to dust and heat.

Short Questions

Q.1. Define the term information technology (IT).

Information technology is the technology that uses computing with high-speed communication links to spread information from one place to another. The interconnection of computers enables people to send and receive information. The world has become a global village due to information technology.

Q.2. Write some application of Information Technology.

The application of information technology include artificial intelligence, e-commerce, m-commerce, computer animation and multimedia etc.

Q.3. Define the term digital convergence.

Digital convergence is the electronic merging of various industries to exchange information between them. These industries are computers, electronics, telecommunications and mass media etc. This merging is very important in modern world.

Q.4. Differentiate between hypermedia and multimedia.

Hypermedia is a process of creating links to files that contain photographs, audio, video and text etc. Multimedia is defined as the use of several different media to convey information in the form of text, audio, graphics, animation and video etc.

Q.5. Define software.

A set of instructions given to computer to solve a problem is called software. Computer software specify a sequence of operations to be performed by computer. A computer works according to the instructions written in software.

Q.6. Define hardware.

The physical parts of a computer are called hardware. Hardware can be touched or seen by us. Keyboard, mouse, CPU, printer, monitor, hard drive, RAM and ROM are examples of hardware components.

Q.7. Give some examples of hardware components.

Some examples of hardware components are keyboard, mouse, CPU, printers, monitor and drives etc.

Q.8. How is hardware different from software?

Hardware are physical parts of computer but software is a set of instructions given to computer to solve a problem. Hardware can be touched but software cannot be touched. Hardware is repaired in case of problem but software is debugged in case of problem.

Q.9. Give reason why hardware is useless without software.

Hardware is useless without software because the hardware cannot perform any task without software. Software contains the instructions to be executed by the hardware.

Q.10. Describe the relationship of software and hardware.

The hardware cannot perform any task without software. Software cannot be executed without hardware. Computer becomes useful when hardware and software are combined.

Q.11. Define data.

A collection of raw facts and figures is called **data**. The word **raw** means that the facts have not yet been processed to get their exact meaning. Data is collected from different sources. It is collected for different purposes. Data may consist of numbers, characters, symbols or pictures etc.

Q.12. Define information.

The processed data is called **information**. Information is an organized and processed form of data. It is more meaningful than data and is used for making decisions.

Q.13. Differentiate between data and information.

Data is a set of raw facts and information is the processed form of data. Data is used as input in the computer and information is the output of the computer.

Q.14. Define computer.

A computer is a machine that can be programmed to accept data, process data into useful information and store it for later use. A computer consists of hardware and software. The processing of input to output is directed by the software but performed by the hardware.

Q.15. Describe major components of a computer with their functions.

The major components of a computer are storage devices, input devices, processor amd output devices. Storage devices are used to store data, instructions and information permanently. Input devices are used to accept input from the user. Output devices send information to the user. The processor is used to process data into useful information.

Q.16. Define system software.

System software is set of programs to control and manage the actual operations of a computer hardware. It controls the usage and allocation of different hardware components. It enables application programs to execute properly.

Q.17. Give the names of any three system software.

Three names of system software are operating system, utility programs and device drivers.

Q.18. Define application software.

Application software is used to perform various applications on the computer. It helps a computer user to perform specific tasks. People use application software according to their needs. It is also known as application package.

Q.19. Explain the difference between application software and system software.

System software gives application software access to computer's resources. It enables the application software to run on computer hardware. Application software allows the user to run software to perform different activities.

Q.20. Explain the relationship of application software and operating system.

Application software uses operating system in order to function. The operating system is the base software. The application software runs on top of the operating system software.

Q.21. What is operating system?

An operating system is a set of programs that manages all computer components and operations. A computer cannot work without operating system. Users interact with the computer through operating system.

Q.22. Give some examples of operating system.

Microsoft Windows, Linux, UNIX and Sun Solaris are examples of operating system.

Q.23. Define utility program.

A utility program is a type of system software that is used for effective management of computer system. The user can use utility programs to perform maintenance tasks related to different devices and programs.

Q.24. What is the use of customized software?

Customized software is a type of application software that is designed for a particular customer or organization. It is developed to meet the exact requirements of a particular customer or organization.

Q.25. Define package software with examples.

Package software is a type of application software that is developed for sale to the general public. It is also known as off-the-shelf software. It facilitates the people to perform day-to-day activities. Examples of package software are word processors and spreasheets etc.

Q.26. Compare customized and package software.

Customized software is developed for specific needs of particular customer. However, the packaged software is developed for sale to the general publice.

Q.27. Define input.

Anything given to the computer is known as input such as data or instructions. Computer inputs data and converts it into information after processing.

Q.28. Write the use of input devices.

An input device is a hardware component that is used to enter data and instruction into a computer. Input devices take data and instructions from user and convert it in a form that is understandable by the computer.

Q.29. List different categories of input devices.

Different categories of input devices are keyboards, pointing devices and source data entry devices.

Q.30. Write names of some commonly used input devices.

Some commonly used input devices are keyboard, mouse, scanner and digital camera.

Q.31. What do you know about keyboard?

Keyboard is the most commonly used input device. The buttons on the keyboard are called **keys**. A standard keyboard contains over 100 keys. The keys available on the keyboards are numeric, alphabetic, function and special-purpose keys.

Q.32. Name important types of keys on keyboard.

The important types of keys on keyboard are function keys, numeric keys, alphbetic keys, arrow keys and special purose keys such as CTRL, ALT etc.

Q.33. Write the characteristics of keyboard.

A keyboard contains keys to type alphabets, letters, numbers, punctuation marks etc. A keyboard also contains numeric keypad to enter numbers. Function keys are used to executed commands for certain tasks. Arrow keys are used to move insertion points.

Q.34. What is enhanced keyboard? Which additional keys are available on it?

Enhanced keyboard has some additional keys between the main keypad and the numeric keys. It also contains status lights in the upper right corner. The additional keys on this keyboard inlcude numeric keys, End, Home, PageUp, PageDown, Insert etc.

Q.35. What do you mean by QWERTY?

A standard keyboard is normally called QWERTY keyboard. This is because the first six keys on top row of letters on this keyboard are Q, W, E, R, T and Y.

Q.36. What are function keys?

Function keys from F1 to F10 or F12 perform special functions. Their function depends on the software being used in the computer.

Q.37. Describe pointing devices.

An input device used to control a pointer on the screen is called pointing device. A pointer is a small symbol that appears on the screen in graphical user interface. Mouse and pointing stick are examples of pointing devices. Mouse and track ball are examples of pointing devices.

Q.38. List some examples of pointing devices.

Some important pointing devices are mouse, track ball, pointing stick, touch pad, touch screen, light pen, graphic tablet, joystick and pen-based system.

Q.39. Define mouse.

Mouse is a small and light weight input device. It is used to control the cusor on the screen. It is also called pointing device. It is mostly used in graphical applications.

Q.40. How does a mouse work?

Mouse is moved on a flat surface to control the movement of cursor on a screen. A mouse usually has two or three buttons. These buttons are used to perform different tasks. It contains small ball at the bottom. The movement of cursor depends on the movement of ball.

Q.41. Identify two alternatives to a mouse.

The two alternatives of mouse are touchpad and trackball.

Q.42. Identify common input devices that you have personally used.

The common input devices are keyboards, pointing devices, scanner, microphone, etc.

Q.43. How is the input of keyboard is different from input of mouse?

Keyboard is used to input data of different types such as numeric and alphanumeric. The mouse is normally used to input instructions and issue commands. It cannot be used to input data.

Q.44. What is track ball?

A trackball can be used as an alternative to a mouse. It has buttons similar to those on mouse. It has a large rotating ball on top. The body of the track ball is not moved. The ball is rolled with fingers. The position of the cursor on the screen is controlled by rotating the ball.

Q.45. What is touch pad or track pad?

A touch pad is a small, flat surface over which the user moves his finger. The movement of the finger moves the cursor on the screen. It is also known as track pad. A touch pad also has one or more buttons near it. These button work like mouse buttons. Touch bads are commonly used with notbook computers.

Q.46. State the difference between track ball and track pad.

Trackball is a stationary pointing device with a ball on its top. The position of the cursor on the screen is controlled by rotating the ball. Track pad uses a small sensitive pad to move the cursor. It has no moving parts. The user can rotate his finger on the pad to move the cursor.

Q.47. What is touch screen?

Touch screen is a video display screen that receives input from the touch of a finger. The user enters data by touching icons or menus identified on the screen. Most touch screen computers use sensors to detect touch of a finger.

Q.48. What is pointing stick?

Pointing stick is a pressure-sensitive device. It is similar to a pencil eraser and exists between keys on the keyboard. The pointer on the screen moves when the user pushes the pointing stick. Pointing stick is normally used with notebook computers.

Q.49. What is graphics tablet?

It is also called digitizer .A graphics tablet consists of a flat pad (the tablet) connected by a wire to a stylus or puck. A **stylus** is a pen-like device used to create sketches and images. A **puck** is a copying device used to copy an image.

Q.50. Write the use of stylus.

Stylus is similar to a ballpoint pen. It uses pressure to write text and draw lines. It was called **pen**. It is used in graphical applications. Architects, artists and designers use it to create drawings and sketches.

Q.51. What do you about Pen-based system?

Pen-based system is used to enter handwriting and marks on computer screen using pen-like stylus instead of keyboard. This system uses handwriting recognition software. The software translates handwritten characters into usable data.

Q.52. What are source-data entry devices? List out some source-data entry devices.

Source data entry devices are used for direct data entry to the computer system. These devices provide a quick and efficient way to input data. The commonly used source data entry devices are barcode reader, MIRC, fax machine etc.

Q.53. Define barcode.

Bar code is an identification code that consists of a set of vertical lines and spaces of different widths. The barcode represents data that identifies the manufacturere and the item.

Q.54. Describe barcode reader.

Bar code reader uses laser beam to read bar codes. It reads barcodes and translate them into digital signals. The digital signals are then further processed by computer. Different products like groceries, pharmacy supplies, vehicles, magazines and books contain bar codes.

Q.55. What is UPC?

UPC stands for **Universal Product Code**. It is a barcode system that is mostly found on manfactured products in the market. The barcode represents data that identifies the product and the manufacturer.

Q.56. What is the use of mark and character recognition devices?

Mark and character recognition devices are used to read information printed on paper. These devices convert this information into a form that can be processed by the computer. MICR, OMR and OCR and examples of mark and character recognition devices.

Q.57. Define MICR.

MICR stands for Mägnetic-Ink Character Recognition Reader. It is used to read text printed with magnetized ink. It is used by banks for check processing. Each check contains MICR characters at lower-left edge to represent check No., bank number and account No.

Q.58. Define OMR.

OMR stands for Optical mark recognition. These devices use light beam to read data. The data is converted into digital signals. The signals are then sent to the computer for further processing. These devices are used to check tests such as SAT and GRE etc.

Q.59. Define OCR.

OCR stands for **Optical character recognition.** It reads printed characters in particular font and converts them into digital code. Most OCR devices use a small optical scanner to read characters. OCR characters appear on utility bills and price tags in departmental stores.

Q.60. Describe magnetic stripe.

Magnetic strips are built into many plastic cards such as personal identity cards. The magnetic strip on the back of the card can hold the personal details of the card owner. It can be used to access secure information such as bank account details etc.

Q.61. Describe smart card.

Smart card is similar to credit card or ATM card. It contains thin microprocessor and memory chip that is embedded in the card. The card is inserted into a specialized card reader. The card reader can read and update its contents. Mobile SIM card and ATM card are examples of smart card.

Q.62. State the use of facsimile.

Facsimile fax machine transmits and receives documents over telephone line. The document may contain text, images or hand-written contents. Fax machine scans document. It converts it into digital form and then transmits.

Q.63. What is digital camera?

Digital camera is an input device. It stores images digitally in its memory rather than recording on film. It does not require film processing. The pictures taken with digital camera can be transfered to a computer. Many digital cameras allow the user to edit the images.

Q.64. How digital camera stores images?

Digital cameras store images using different techniques like floppy disk, SuperDisk, PC Card, compact flash card, memory stick, mini-CD and microdrive.

Q.65. Write any two advantages of digital camera.

No film is needed and there are no film developing costs

Unwanted images can be deleted straight away

Q.66. What is audio input?

The process of entering any sound into the computer is called audio input. It may include speech and music etc. Audio can be entered through microphone. Audio input devices record the analog sound and convert it into digital form for further processing. The main use of audio input devices is to provide digital input for multimedia computers.

Q.67. What is video input?

The process of entering full-motion recording into a computer is called video input or video capture. Video can be entered from an analog device like VCR. The analog signals of video must be converted into digital format before storing it in the computer.

Q.68. Define raster graphics.

Raster graphics is a technique to represent an image as a matrix of dots.

Q.69. Define output.

The data that has been processed into useful information is called output. There are two types of output. These are soft copy and hard copy.

Q.70. Explain the difference between software copy and hard copy.

Soft copy is in electronic form but hard copy is in printed form. Soft copy is easier to modify but hard copy is difficult to modify. Soft copy is stored on storage devices but hard copy is printed on paper. Soft copy can be duplicated without cost but hard copy can be duplicated with cost.

Q.71. Define pixel.

Pixel stands for picture element. Pixels are the dots that form images on the monitor. The higher number of pixels increases image sharpness.

Q.72. Explain output devices.

The hardware components that are used to receive information from the computer are called output devices. Output devices take information from the computer and convert it in a form that is understandable by users. Printer and monitor are examples of output devices.

Q.73. Write names of some important output devices?

Some important output devices are monitor, printer, plotter and speaker.

Q.74. What are display screens?

A display screen is also known as monitor or simply screen. It is used to display soft copy output. There are different types of display screens.

Q.75. Which features distinguish one type of display screen from other?

Different display screens can be distinguished on the basis of the following features:

- Size
- Color
- Resolution
- Video Adopter Card

Q.76. Differentiate between color monitor and monochrome monitor.

Color display screens display output in multiple colors. RGB display can create 256 colors and thousands of variations of these colors. Single color display screen is called monochrome. They show images in a single color usually white, green, blue, red or amber.

Q.77. List out different types of graphic cards.

Different types of graphics cards are VGA, SVGA and XGA.

Q.78. Define VGA.

VGA stands for **Video Graphics Array**. It supports 16-256 colors depending on screen resolution. It supports 15 colors at 320x200 pixels. It supports 256 colors at 640x840 pixels. It is called 4-bit color.

Q.79. Define SVGA.

SVGA stands for Super Video Graphics Array. It supports 256 colors at higher resolution then VGA. It has two graphics modes. These are 800x600 pixels and 1024x768. It is called 8-bit color. SVGA is the most common standard used today.

Q.80. Define XGA.

XGA stands for **Extended Graphics Array**. It supports up to 16.7 million colors at a resolution of 1024x768 pixels. XGA supports 256,65536 or 16,777,216 colors depending on the video display adapter memory chip. It is called 24-bit color or true color.

Q.81. Identify the two classes of monitors and explain the advantages of each.

The two classes of monitors are CRT (cathode-ray tube) monitors and flat-panel LCD (liquid crystal display) monitors. The advantages of CRT are clarity and low cost. The advantages of LCDs are light weight and more compact than CRTs.

Q.82. Write a short not on CRT monitor.

CRT monitor uses **cathode ray tube (CRT)** to display an image on screen. It consists of one or more guns. The guns fire a beam of electrons at a coating of very tiny phosphor dots inside screen The beam of electrons repeatedly falls on the surface of screen.

Q.83. Which three technologies are used in flat-panel display screens?

1. Liquid Crystal Display
2. Electro Luminescent Display
3. Gas Plasma Display

Q.84. What do you know about Gas Plasma Display?

This type of display screen is similar to neon bulb. The display uses a gas that emits light in presence of electric current. It is more expensive technology. It is not commonly used.

Q.85. What do you know about a printer?

A printer is an output device that prints characters, symbols and graphics on paper. The printed output is generally referred to as hardcopy. Print resolution is commonly measured in dots per inch (dpi). Impact and non-impact are two categories of printers.

Q.86. How is printer resolution measured?

The printer resolution is measured in dots per inch (dpi). The printers with higher resolution produce higher quality output.

Q.87. List different types of printer? Give example of each type.

Different types of printers are impact printers and non-impact printers. Line and dot-matrix are examples of impact printers.Laser and ink-jet are examples of non-impact printers.

Q.88. How does an impact printer work?

An impact printer works like a typewriter. It prints characters or images by striking a print hammer or wheel against an inked ribbon.

Q.89. How does non-impact printer work?

A non-impact printer prints characters and graphics on paper without striking paper. Some printers use spray ink while others use heat and pressure to create images. These printers are faster than impact printer.

Q.90. Give two examples of non-impact printers?

Two examples of non-impact printers are inkjet printers and laser printers.

Q.91. State the working of dot-matrix printer.

Dot matrix printer produces printed images when tiny pins on a print head strike an inked ribbon. When the ribbon presses against the paper, it creates dots that form characters and graphics.

Q.92. Write any two disadvantages of dot-matrix printer.

Dot matrix printer does not provide high quality output. It creates a lot of noise while printing.

Q.93. State the working laser printers.

Laser printers are non-impact printers. Its working is similar to photocopying machine. It uses laser beams to burn special powder on page to create a permanent image. The powder is contained in **toner**. Laser printer creates high quality output at higher speed.

Q.94. Write any three characteristics of laser printer.

Laser printer produces very high quality output. It prints at a higher speed. It does not make much noise.

Q.95. Which type of printer has better printing quality?

Laser printer has better printing quality than other types of printers.

Q.96. State the working of inkjet printer.

An ink-jet printer prints characters and graphics by spraying tiny drops of liquid ink on paper. These printers can produce quality text and graphics in both black-and-white and color. Inkjet printers are slower than laser printers.

Q.97. Write the advantages of non-impact printers over impact printers.

Non-impact printers do not make noise. They provide high-quality output than impact printers.They print at a faster speed than impact printers.

Q.98. How is non-impact printer different from impact printer?

Non impact printers print characters and graphics on paper without striking the paper. Impact printers print characters and graphics by striking a mechanism against an ink ribbon that physically touches the paper.

Q.99. Define plotter.

A plotter is an output device that is used to produce image-quality graphics in different colors.

Q.100. Write some applications of plotter.

A plotter is used to create maps, graphs and charts. It is also used to plot civil engineering drawings and machine components.

Q.101. List out different types of plotters.

Different types of plotters are as follows:

1. Flatbed Plotter
2. Drum Plotter

Q.102. Describe flatbed plotter.

Flatbed plotter is used to plot or draw images. It contains pens for drawing images. The paper is placed on table-like surface. Software instructs the pens to move down on the paper. The pen then moves on the paper for creating images.

Q.103. Describe drum plotter.

Drum plotter uses a rotating drum or cylinder. The drawing pens are mounted on the drum. The pens move to the left and right as the drum rotates. This movement creates the desired image.

Q.104. Write two reasons of using plotter over printer. Also write one drawback of plotter.

The plotter is better over printer to draw maps, graphs and machine components. It is very good for line drawings where accuracy and simplicity is very necessary. The drawback of plotter is that it is considerably more expensive than printer.

Q.105. Explain the difference between plotter and printer.

The difference is that a plotter draws lines and curves using pens but the printer prints lines and images using dots. Plotters are more expensive than pritners. Plotters are not used to print ordinary photographs.

Q.106. Define terminal.

Terminal is a device that performs input and output. It consists of a monitor, keyboard and a video card.

Q.107. What do you know about notebook computers?

Notebook computer is also called **laptop computer.** Laptop computers are very small in size and can be placed easily on lap. They can be used using batteries. Laptop computers are more expensive than desktop computers

Q.108. Define audio input.

The process of entering any sound into computer is called **audio input.** It may include speech, music or other sound effects. Audio can be entered through microphone, CD player.

Q.109. Describe microphone.

Microphone is an input device used to digitally record audio data such as human voice etc. It enables the user to input text and issue commands orally.

Q.110. Why is 1K not exactly 1,000?

1K is 2^{10} which is 1,024.

Q.111. List basic units of data storage.

Bit: A binary digit (BIT) (0 or 1) is called bit and occupies one storage location.

Byte: A group of 8 bits is called a byte. One byte can store one character.

Kilo byte: 1KB = 1024 bytes

Megabyte: 1MB = 1024 KB

Gigabyte: 1GB = 1024 MB

Tara byte: 1TB = 1024GB

Q.112. How many bits form one byte?

A collectioni of 8 bits form one byte.

Q.113. Convert 1 gigabyte into bytes.

1 gigabyte = 2^{30} bytes = About one billion bytes

Q.114. Differentiate between bit and byte.

Bit stands for binary digit. It is the smallest unit of data that can be used by computer. It can be either 0 or 1. Byte is a collection of 8 bits. 1 byte is required to store one character.

Q.115. Write the names of some important secondary storage devices.

Some important secondary devices are floppy disk, hard disk and compact disk.

Q.116. What is Floppy disk?

Floppy disk is flexible magnetic disks. It is also known as **diskette**. Floppy disk can only store a small amount of data. The standard size of floppy disk is 3 ½ inch. The capacity of floppy disks is 1.44MB.

Q.117. What is hard disk?

Hard disk is a type of magnetic disk. A hard disk consists of several circular disks called **platters**. The platters are used to store data. A platter in a hard disk is coated with a magnetic material. The hard disk in most personal computers is fixed inside the system unit.

Q.118. Do all computers contain a processing unit?

All computers contain a processing unit (CPU). CPU is like the brain of computer. A computer without a CPU cannot work.

Q.119. State the purpose of central processing unit? Give its other names.

The purpose of the central processing unit is to perform the processing actions of the computer. This includes arithmetic calculations and logical operations. Other names for the CPU are the processor, the chip, and the microprocessor.

Q.120. Define system. List out its components.

A **system** can be defined as a combination of different components that interact with each other to perform specific tasks. Different components of a system inlcude hardware, software, people/users, procedures, data/information and communucation setup.

Q.121. Define SDLC. List out its phases.

SDLC stands for **System Development Life Cycle**. A set of steps that are required to develop a system is called system devleopment life cycle.It is an organized way of developing successful systems. Different phases of SDLC are Preliminary Investigation, System Analysis,System Design, System Coding, System Testing and System Implementation

Q.122. What is the purpose of preliminary investigation?

Preliminary investigation is used to conduct an initial analysis and findings of the system. It inlucdes identification of the system and determining its scope. It also provides alternative solution for developing the system.

Q.123. Name different activities performed in preliminary investigation of SDLC.

Different activities performed in preliminary investigation of SDLC inlcude system identification, system scope, alternative solutions, feasibility study and preliminary plan.

Q.124. Define feasibility study.

A **feasibility study** is used to find whether the proposed system is feasible. The financial, political, social and time constraints must be considered during this study.

Q.125. What is preliminary plan? What is its use?

Preliminary plan consists of all findings in written form for approval. It is also called **feasibility report**. It is normally submitted to the top managers of the organization. They may accept, modify or reject the report.

Q.126. What is the purpose of system analysis?

In system analysis phase, the current business system is studied in detail to find out how it works and how to improve it. It explains the problems of current system and provides recommendations for the new system.

Q.127. Write down different activities performed in system analysis of SDLC.

Different activities performed in system analysis of SDLC inlcude need analysis, data gathering, data analysis and analysis report.

Q.128. What are data gathering techniques? List some important techniques.

Data gathering techniques are used to collect detailed information about the system. These techniques include study of written documents, interviewing, questionnaires, observation and sampling.

Q.129. Describe the importance of written documents for analyst.

The written documents of the current system are important source of information for the analyst. The analyst can study these documents to find out the problems in the system. The documents include reports, forms and business plans etc.

Q.130. Write the purpose of interviewing.

Interviewing is used to get information from managers and users by discussing the problems. The analyst asks questions to understand the problems in a system. The questions asked in interview must be simple and relevant.

Q.131. What is the use of questionnaires?

Questionnaires are used to collect information from a large number of people. It is very useful when interviews of many users cannot be conducted. It is also very simple and quick method of collecting information.

Q.132. What do you know about analysis report?

Analysis report is produced at the end of system analysis. It is submitted to the top management for review. The report should explain the problems in the current system. It should describe the requirements and recommendations for new system.

Q.133. State the purpose of system design phase.

System design phase is used to design the logical model and physical model of the new system. System design states how the new system will meet the requirements identified in the system analysis phase.

Q.134. Describe the logical design of a system.

Logical design describes the functional capabilities of the new system. It reviews the system requirements and considers the major system components. Physical design describes how the proposed system will deliver the capabilities specified in the logical design.

Q.135. Describe the coding phase of SDLC.

This phase consists of writing programs for the system. Single programmer or a team of programmers develops the system using different tools. This phase requires a lot of time, effort and budget to develop the complete system.

Q.136. Why is it important to test a system before use?

Complete testing of the system is very important. A system must be tested to detect and remove errors in it. The system is tested by giving sample data.

Q.137. Define parallel conversion.

A type of conversion in which both new and old systems operate together for a period of time is called parallel conversion. It is the safest type of conversion. The results of both systems are compared. The old system is used until all problems in new system are removed.

Q.138. Describe pilot conversion.

In this type of conversion, one part of the organization uses the new system and the rest of the organization uses the old system. When one part of the organization is satisfied with the new system, the rest of the organization can start using it.

Q.139. Describe phased conversion.

A type of conversion in which individual components of new system are implemented one by one is called phased conversion.

Q.140. Describe direct conversion.

In this type of conversion, old system is directly replaced by new system. It is the most risky conversion. It may be necessary when time is very short.

Q.141. Who is a programmer?

A person who develops application or system software. Programmer writes instructions to direct computer to process data into information

Q.142. Why is resolution important when using a scanner.

Resolution is the number of pixels on the screen. It is the image sharpness of an display screen. When an image is scanned, its quality also depends on the resolution. If the scanner provides high resolution, the scanned image will be brighter and sharper

Q.143. Give three reasons why flat-screen monitors are becoming more popular than conventional CRT monitors?

Flat screen monitors are becoming more popular due to the following reasons:

Physical size: Flat-panel takes less space than conventional monitor.

Weight: The weight of flat-panels are less than conventional monitors and are easier to move.

Power: Flat-panels use significantly less power than CRTs.

Q.144. Differentiate between direct and indirect input.

In direct input, data goes directly to the computer from the source. For example, speech is directly entered into computer through microphone. In indirect input, some intermediate handling is required to input data. The data entered through keyboard and mouse are examples of indirect input.

Q.145. Why resolution is important for display screen?

Resolution is very important for displays screen. All characters and images on the display screen are made of pixels or dots. Resolution is the number of pixels on screen. It is the image sharpness of a display screen. A high number of pixels means sharper image.

Multiple Choice

1. **A collection of raw facts and figure is called:**
   a. Data b. Information c. Processing d. None
2. **A computer's main function is to:**
   a. Convert information into storage. b. Convert data into information
   c. Display data. d. Create data from information.
3. **Multimedia can include the use of:**
   a. Text b. Animation c. Voice d. All
4. **Data processing is also known as:**
   a. Accuracy b. Computing c. Speed d. Merging
5. **The modern revolution in information technology can be termed as:**
   a. Computer revolution b. Information revolution
   c. Communications revolution d. All
6. **The computing and communication technologies are combined together for:**
   a. Data sequencing b. Data routing c. Searching data d. Data communication
7. **What is the difference between hardware and software?**
   a. Hardware is tangible but software is intangible
   b. Hardware is metal but software is plastic
   c. Hardware is permanent but software is temporary
   d. Hardware is reliable but software is unreliable
8. **Hardware is best described as:**
   a. Physical parts b. Printed copy file c. A program d. Logical part
9. **Computer is a combination of:**
   a. Software b. Hardware c. Both a and b d. None
10. **Devices used to enter data or information into a computer includes:**
    a. Keyboard b. Mouse c. Microphone d. All
11. **Which of the following is an input device?**
    a. Keyboard b. Mouse c. Microphone d. All
12. **The piece of hardware that permanently holds data and programs is called:**
    a. Primary storage b. CPU c. Secondary storage d. Output
13. **The piece of hardware that temporarily holds data and programs is called**
    a. Primary storage b. CPU c. Secondary storage d. Output
14. **The electronic circuit that executes computer instructions is called a(n):**
    a. Monitor b. Hard disk c. CPU d. keyboard
15. **Which of the following is not a secondary storage device?**
    a. CD-ROM b. Hard disk c. DVD-ROM d. Central processing unit
16. **CPU is an example of:**
    a. Software b. Program c. Hardware d. None
17. **CPU stands for:**
    a. Central Processing Unit b. Central Product Unit
    c. Computing Program Usage d. Central Programming Unit
18. **Additional data and programs not being used by CPU are stored in:**
    a. Secondary Storage b. Input Units c. Output Units d. CPU

19. **Step by step instructions that run the computer are called:**
a. Hardware b. Documents c. Calculating d. Software

20. **Printers and monitors are common forms of:**
a. Input units b. Output unit c. Storage unit d. Processing unit

21. **Another name for main memory is:**
a. Secondary memory b. Permanent memory
c. Primary storage d. Tape Storage

22. **A major category of software is:**
a. Application software b. System Software c. Both a and b d. Design

23. **Software that controls computing resources is called:**
a. Custom software b. System software c. Package software d. None

24. **Which of the following is an example of system software?**
a. Operating system b. Utility program c. Drivers d. All

25. **Which software is used to solve everyday personal or business tasks?**
a. Operating system b. System software
c. Application software d. Device Driver

26. **Software that is developed specifically for the company's own use is called:**
a. Custom software b. System software
c. Package Software d. Device Driver

27. **Which of the following is an example of packaged software?**
a. MS Word b. MS Power point c. MS Excel d. All

28. **The ways of entering data in computer and presenting information generated by the system are called:**
a. Processing b. Input/output c. Storage/retrieval d. Data generation

29. **Which device translates data into a form that the computer understands?**
a. Input b. Output c. Storage d. Network

30. **Which of the following is general type of input devices?**
a. Keyboard b. Pointing devices c. Source data-entry devices d. All

31. **Which of the following is not an output device?**
a. Scanner b. Printer c. Monitor d. Speaker

32. **The term that refers to all input, output, and secondary storage devices is:**
a. Peripheral b. Central c. Attached d. Network

33. **Which is a correct association between hardware device and component type?**
a. Mouse–processing b. Keyboard-input c. Hard disk–output d. CPU–storage

34. **Which is a correct association between hardware device and action?**
a. Scanner – processing b. Keyboard - connectivity
c. CD-ROM – output d. CPU – data manipulation

35. **Which is a correct association between hardware device and component type?**
a. Memory – processing b. Magnetic tape – input
c. Monitor – output d. Stylus – storage

36. **The most familiar input device for computers is:**
a. Scanner b. Keyboard c. Graphics Tablet d. Monitor

37. **The keyboard format that is most commonly used is the:**
a. QWERTY b. Dvorak c. TWRITER d. SPLITTER

38. **Which key removes the character to the right of the cursor?**
a. Esc b. Alt c. Delete d. Backspace
39. **Which key removes the character to the left of the cursor?**
a. Esc b. Alt c. Delete d. Backspace
40. **Arrow keys are also called:**
a. Toggle keys b. Function keys c. Modifier keys d. Cursor control keys
41. **Caps Lock is a:**
a. Toggle key b. Window key c. Modifier key d. Cursor control key
42. **An insertion point is another name for a:**
a. Cursor. b. Pixel .c. puck d. chip
43. **Which of the following keys is used to cancel an operation?**
a. Arrow b. Caps Lock c. Num Lock d. Esc
44. **An example of a pointing device is:**
a. Joystick b. trackball c. Touch screen d. All
45. **When the amount of workspace is limited, an alternative to mouse could be a:**
a. Trackball b. Scanner c. Pointing stick d. Both a and c
46. **A tiny handle in the middle of the keyboard is called:**
a. Mouse b. Trackball c. Pointing stick d. Graphics tablet
47. **An example of a pointing device used with portable computers is:**
a. Touchpad b. Pointing stick c. Trackball d. All
48. **A graphics tablet is commonly activated by:**
a. Finger b. Joystick c. Stylus d. Trackball
49. **Which pointing device is commonly used for gaming:**
a. Touchpad. b. Pointing stick. c. Light pen. d. Joystick.
50. **A pen-like instrument used to trace images on paper is called a:**
a. Pointing stick. b. Touch pad. c. Joystick. d. Stylus.
51. **A type of reader commonly used to read UPC code is called:**
a. Bar-code reader b. Optical-mark reader
c. Magnetic-ink character reader d. Both a and c are correct
52. **The type of reader commonly used to read bank checks is a(n) :**
a. Optical-mark reader b. Magnetic-ink character reader
c. Bar-code reader d. None
53. **Which device uses light to determine the location of pencil marks on sheets?**
a. Bar-code reader b. Optical-mark reader c. MICR d. Stylus
54. **The technology of recognizing individual characters on a printed page so they can be stored and edited as text is called:**
a. Bar-code recognition (BCR) b optical character recognition (OCR)
c. Magnetic-ink character recognition d. optical-mark recognition (OMR)
55. **Printed image can be input into digital form inside the computer using a:**
a. Mouse b. Stylus c. Scanner d. Magnetic strip card
56. **Which device is used to capture video using standard analog camcorder or VCR?**
a. Video captures card b. Digital camcorder c. Image recorder d. Video digitizer
57. **Output can be:**
a. Printed out b. Displayed on screen c. Played through speaker d. All

58. **What type of device translates data into a form that we can understand?**
a. Input b. Output c. Storage d. Network

59. **Devices commonly used to receive data and information from computer includes:**
a. Monitor b. Printer c. Speaker d. All

60. **Two types of display devices are_____ displays.**
a. Inkjet and laser b. Flat-panel and CRT c. Impact and non-impact d. None

61. **Monitors differ in:**
a. Size. b. Resolution. c. Graphics standard. d. All

62. **The dots that compose the image of a digital photograph are called:**
a. Dot matrix. b. Resolution points. c. Pixels. d. Digital points.

63. **The name for screen clarity:**
a. Pixel. b. Resolution. c. Density. d. Picture quality.

64. **The resolution of a monitor depends on:**
a. Number of pixels that can be displayed b. Number of bits representing a pixel
c. Dot pitch of the monitor. d. All

65. **How many types of graphics cards are available in market?**
a. 2 b. 4 c. 3 d. 7

66. **The circuit board that connects the monitor to computer is called:**
a. Video adapter b. Monitor link c. Monitor adapter d. None

67. **Which of the following is determined by video display adapters:**
a. Resolution b. Number of colors
c. Speed with which image appear on screen d. All

68. **The lowest resolution for color graphics display is:**
a. CAD. b.VESA. c. XGA d. VGA.

69. **XVGA resolution is:**
A. 640 x 480. b. 640 x 400. c. 800 x 600. d. 1024 x 768.

70. **The advantage of high-resolution over low-resolution digital photography is:**
a. Better picture quality. b. Greater cost savings.
c. Fewer storage requirements. d. Faster processing speed.

71. **The higher the resolution:**
a. The greater the number of pixels. b. The larger the pixel size.
c. The more accurate the voice recognition. d. The bigger the picture.

72. **The individual images that make up a video are called:**
a. Frames. b. Pixels. c. Digits. c. Bytes.

73. **Pixel is short for:**
a. Page edit b. Place edit. c. Picture enters. d. Picture elements.

74. **A pixel might be displayed as:**
a. Black b. White c. blue d. all

75. **Which of the following device is used to get softcopy output?**
a. Printer b. Plotter c. Monitor d. None

76. **XGA supports up to:**
a. 16 colors b. 64 colors c. 16.7 million d. 16.7 billion colors

77. **Which type of flat-panel computer screen provides the highest-quality image?**
a. LCD b. ELD c. Gas plasma d. None

78. **Which of the following technologies is used in flat-panel display screens?**
a. LCD b. EL c. Gas-plasma d. All

79. **The advantage of an LCD monitor is that it is:**
a. Lighter b. Faster c. More compact d. Both a and c

80. **Monitor capabilities are described in terms of all of the following EXCEPT:**
a. Color. b. Speed. c. Resolution. d. Size.

81. **A printer is needed to:**
a. Create hardcopies of document b. Load educational software
c. Installment document file d. None

82. **Laser printer is an example of:**
a. Non-Impact b. Inkjet c. Impact d. Dot Matrix

83. **The output of printer is called:**
a. Hard copy b. Graphics c. Multimedia d. None

84. **The cheapest form of printer available for PC is:**
a. Dot-Matrix b. Laser c. Inkjet d. None

85. **What type of printer forms images one character at a time as print head moves across the paper?**
a. Inkjet printers b. Laser Printers c. Dot Matrix d. None

86. **Which of the following is faster printer?**
a. Laser b. Inkjet c. Dot Matrix d. None

87. **Which of the following is a non-impact printer?**
a. Line printer b. Ink-jet printer c. Dot-matrix printer d. Active matrix printer

88. **Which printer should be used on mainframes for high-volume report printing?**
a. Line printer b. Daisy Wheel printer c. Dot-matrix printer d. None

89. **Which type of printer operates most like a photocopy machine?**
a. Line printer b. Ink-jet printer c. Dot-matrix printer d. Laser printer

90. **Which of the following is an impact printer?**
a. dot-matrix printer b. Daisy Wheel printer c. Line printer d. All

91. **The speed of laser printers is measured in:**
a. Characters per second (cps) b. Words per minute (wpm)
c. Lines per minute (lpm) d. Pages per minute (ppm)

92. **Which printer is characterized by melting wax-based ink onto ordinary paper?**
a. Dot-matrix b. Inkjet c. Laser d.Thermal

93. **Maps are specialized application of:**
a. Line printer b. Impact printer c. Plotters d. None

94. **A gigabyte is equal to:**
a. One thousand kilobytes b. 1024 megabytes
c. 1024 x 1024 megabytes d. One million megabytes

95. **Which of the following is the largest unit of data?**
a. Bit b. Byte c. Word d. All are equal

96. **The smallest unit of information in the computer is:**
a. Character b. Word c. Bit d. Byte

97. **A bit can represent how many different values?**
a. 0 b. 1 c. 2 d. 3

98. The meaning of the value of a bit is:
a. On or off b. One or zero c. Yes or no d. All

99. A binary signal can be sent using:
a. One bit b. Two bits c. Three bits d. Four bits

100. How many bits are in one byte?
a. 1 b. 2 c. 4 d. 8

101. A group of bits can represent:
a. Characters b. Colors c. Sounds d. All

102. A kilobyte is exactly:
a. 1 bytes b. 100 bytes c. 256 bytes d. 1,024 bytes

103. One MB is approximately:
a. 1kb b. 100KB c. 1024 bytes d. 1024KB

104. TB is approximately:
a. 1,000 KB b. 1024MB c. 1,024 GB d. Both b and c are

105. GB is approximately:
a. 1,000 KB b. 1,024 MB c. 100 TB d. Both b and c are correct

106. Which of the following is ranked from smallest to largest?
a. KB, MB, TB, GB b. MB, TB, GB, KB c. GB, KB, MB, TB d. KB, MB, GB, TB

107. The number of bits a computer can process at one time is sometimes called:
a. Bit strength b. Crunch capacity c. Bite size d. Word size

108. The most widely used secondary storage is:
a. Diskettes. b. Hard disks. c. Read only memory. d. Both a and b

109. An organized set of related components is called:
a. SDLC b. Network c. Processing d. System

110. The process of studying an existing system to determine how it works is called:
a. Computer programming. b. Systems design.
c. Systems analysis. d. User requirements testing.

111. Which of the following is the first phase of SDLC?
A. Design b. Coding c. Preliminary investigation d. Analysis

112. Which of the following task is related to preliminary investigation?
a. System specifications b. System scope c. Feasibility study d. All

113. Which of the following tasks is not part of the systems analyst role?
a. Programming b. Coordination c. Communication d. Planning

114. Setting the boundaries or scope of the problem is done during:
a. Preliminary investigation b. Systems analysis.
c. Systems design. d. System development.

115. Exhaustive data gathering is done during:
a. Preliminary investigation. b. Analysis c. Design d. Development

116. Which type of diagram shows how information flows through a system?
a. Logic flowchart b. Gantt chart c. DFD d. Decision table

117. System requirements are created during:
a. Preliminary investigation. b. Analysis c. Design d. Development

118. Specifications on how the system will satisfy its requirements are created during:
a. Analysis b. Design c. Development d. Implementation

119. A common type of diagram in most project management software is:
a. Gantt chart. b. CASE tool. c. System flowchart. d. Data flow diagram.

120. Testing of a program component is called:
a. Pilot testing b. Isolation testing c. System testing d. Unit testing

121. Which method is used to collect information from many people in organization?
a. Questionnaires b. Observation c. Sampling d. Interview

122. Which of the following methods is used in data gathering step of system analysis?
a. Interview b. Questionnaires c. Sampling d. All

123. Testing all program components together is called:
a. Volume testing b. Group testing c. System testing d. Composite testing

124. The process of training personnel to use the new systems is done during:
a. Analysis b. Design c. Development d. Implementation

125. The type of conversion in which a subset of users migrate to new system while others continue to use the old one until the new system is tested, is called:
a. Direct b. Pilot c. Phased d. Parallel

126. The type of conversion in which individual components of the new system are used one by one is:
a. Direct b. Pilot c. Phased d. Parallel

127. The type of conversion in which both new and old systems operate together for a period of time is:
a. Direct b. Pilot c. Phased d. Parallel conversion.

128. System analysis produces which of the following results?
a. Review of existing system b. Design constraints
c. Requirements definition d. All

129. The process of modifying information system to meet changing needs is called:
a. System maintenance b. System modification
c. System upkeep d. System management

130. What comes after the analysis phase in the SDLC?
a. Implementation b. Design c. Testing d. Support

131. A standard keyboard used in personal computer has how many keys?
a. 110 b. 115 c. 111 d. 102

132. The microphone converts the sound into:
a. Mechanical signal b. Electrical signal c. Computer file d. None

133. BIT stands for:
a. Binary digit b. Byte digit c. Base digit d. Basic Digit

134. DPI stands for:
a. Dot per inch b. Decimal per inch c. Digit per inch d. Data per inch

135. TB stands for:
a. Tera byte b. Tera bit c. Tera base d. Test Byte

136. DW stands for:
a. Double word b. Double wide c. Double width d. Digital Word

137. OMR stands for:
a. Optical Mark Reader b. Optical Map Reader
c. Optical Mark radiation d. None

138. LCD stands for:
a. Liquid Crystal Display b. Linear Crystal Display
c. Layered Crystal Display d. Long Crystal Display

139. CRT stands for:
a. Coated Rays Tube b. Cathode Rays Tube c. Chemical Rays Tube d. None

140. MB stands for:
a. Mega Byte b. Mega bit c. Mechanical base d. Magnetic base

141. DFD stands for:
a. Data Flow Diagram b. Data Definition Diagram
c. Digital Flow Diagram d. Data Flow Design

142. MICR stands for:
a. Magic Ink Character Reader b. Magic ink character Recorder
c. Magnetic Ink Character Reader d. Magnetic Ink Code Reader

143. A disadvantage of the laser printer is:
a. It is quieter than an impact printer b. It is very slow
c. The output is of a lower quality d. None

144. Which operation is not performed by computer?
a. Inputting b. Processing c. Controlling d. Understanding

145. VGA is
a. Video Graphics Array b. Visual Graphics Array
c. Volatile Graphics Array d. Video Graphics Adapter

146. Multiple choice examination answer sheet can be evaluated automatically using:
a. OMR b. OCR c. MICR d. Magnetic Stripe

Answers

1.	a	2.	b	3.	d	4.	b	5.	d	6.	d
7.	a	8.	a	9.	c	10.	d	11.	d	12.	c
13.	a	14.	c	15.	d	16.	c	17.	a	18.	a
19.	d	20.	b	21.	c	22.	c	23.	b	24.	d
25.	c	26.	a	27.	d	28.	b	29.	a	30.	d
31.	a	32.	a	33.	b	34.	d	35.	c	36.	b
37	a	38.	c	39.	d	40.	d	41.	a	42.	a
43.	d	44.	d	45.	d	46.	c	47.	d	48.	c
49.	d	50.	d	51.	a	52.	b	53.	b	54.	b
55.	c	56.	a	57.	d	58.	b	59.	d	60.	b
61.	d	62.	c	63.	b	64.	d	65.	c	66.	a
67.	d	68.	d	69.	d	70.	a	71.	a	72.	a
73.	d	74.	d	75.	c	76.	c	77.	c	78.	d
79.	d	80.	b	81.	a	82.	a	83.	a	84.	a
85.	c	86.	a	87.	b	88.	a	89.	d	90.	d
91.	d	92.	d	93.	c	94.	b	95.	c	96.	c
97.	c	98.	d	99.	a	100.	d	101.	d	102.	d
103.	d	104.	c	105.	b	106.	d	107.	d	108.	d
109.	d	110.	c	111.	c	112.	d	113.	a	114.	a

115.	b	116.	c	117.	b	118.	b	119.	a	120.	d
121.	a	122.	d	123.	c	124.	d	125.	b	126.	c
127.	d	128.	d	129.	a	130.	b	131.	d	132.	b
133.	a	134.	a	135.	a	136.	a	137.	a	138.	a
139.	b	140.	a	141.	a	142.	c	143.	d	144.	d
145.	a	146.	a								

Fill in the Blanks

1. A bridge is used where_____ types of networks are to be joined together.
2. WAN stands for_____.
3. A set of instructions given to computer to solve a problem is called_____.
4. _____ and_____ printers are non-impact printers.
5. Trackball is popular among users of _____ computers.
6. SVGA stands for_____.
7. 1024 GB are equal to _____.
8. OMR reads _____ marks and converts them into computer-usable form.
9. LCD stands for_____.
10. Fax stands for_____.

Answers

1. Similar	2. Wide area network	3. program
4. Inkjet, laser	5. laptop	6. Super video Graphic array
7. One Tara byte	8. SAT or GRE	9. Liquid crystal display
10. Facsimile		

True / False

1. The keyboard arrangement provided as standard on most keyboards is QWERTY.
2. A picture element on the screen is called a pixel.
3. CRT are used on portable computers.
4. Audio-output device can output only music.
5. Non-impact printers are quieter than impact printers.
6. A trackball is a pointing device almost like a mouse turned upside down.
7. The disk drives are known as I/O devices.
8. Function keys are used the same way with every software application.
9. EGA stand for Extended Graphic Adapter.
10. The two basic types of plotter are the drum plotter and the flatbed plotter.

Answers

1. T	2. T	3. F	4. F	5. T
6. T	7. T	8. F	9. F	10. T

Chapter 2

Information Networks

Q. What is information network / computer network? Explain its uses.

An **information network** is a set of two or more computers connected together to share information and resources like printer and hard disk etc. It is also called **computer network.**

The information network uses two important technologies. These are **computing** and **telecommunications.** Telecommunication is a process of transferring information over a distance through radio waves and optical signals etc. The computers in a network are connected with one another through cables, satellite or phone lines.

Uses / Benefits of Computer Networks

Following are some important uses of computer networks:

- Networks are used to access shared data.
- Networks are used to share different devices such as printers and hard disks etc.
- Networks are used to send email with attachments of files etc.
- Networks are used to communicate with different people all over the world easily.
- One copy of software can be shared over a network by multiple users.

Q. Write a short note on workgroup computing and groupware.

Workgroup Computing

Workgroup is a group of persons working together on a particular task by sharing information through a computer network. The process of sharing information by using a computer network is called **workgroup computing.** It is also called **collaborative computing.**

The workgroup members may be at different places in the world. They can share their ideas and experiences using computer network. Different types of files, pictures, sounds, videos and graphics can be exchanged among the member of workgroup.

The transfer of data and information using a computer network is very fast and efficient. Workgroup computing has played an important role in research and development.

Groupware

Groupware is a software used for workgroup computing. It is used on a computer network. The researchers can use it to share information about different projects online. The individuals can use it to collaborate with their colleagues etc.

Q. What is terminal computer and server computer?

Terminal Computer

Every computer that is part of a computer network is called a **terminal** or **node**. The users using different terminal computers can share information and send or receive data from one terminal to another.

Server Computer

A **server computer** in a computer network is used as a central computer. It controls other computers in the network. Server computer is more powerful than terminals.

Q. Discuss different networks models.

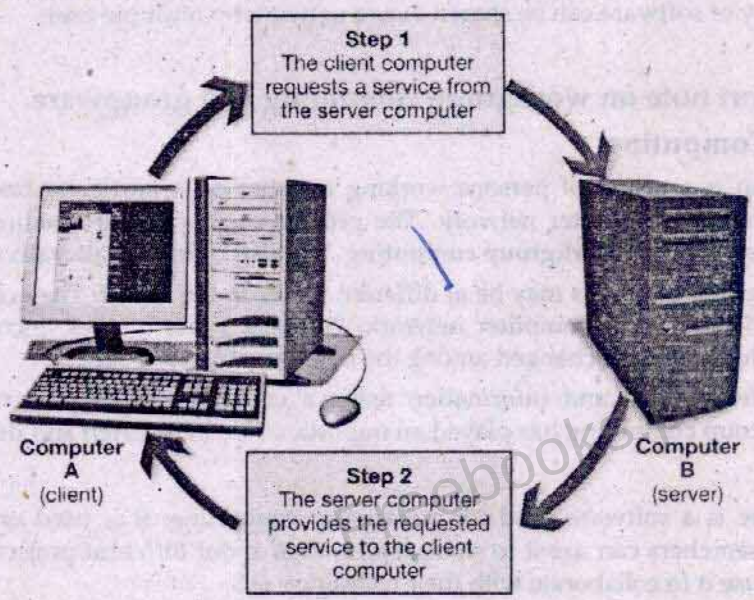
There are two models of computer networks. These are as follows:

- Client-Server Model
- Peer-to-Peer Model

1. Client-Server Model / Dedicated Server Network

In **client-server model**, one or more computers work as **servers** and other computers work as **clients**. The server computer controls the whole network. It is used to store data and programs to be shared among different computers in the network. It may also share a printer attached with it. Server is more powerful computer than other computers in the network. It performs most of the processing in this network model.

The client computer requests a service from the server computer. The server computer provides the requested service to the client computer.



Some servers are called dedicated servers. A **dedicated server** is used to perform a specific task. For example, **file server** is used to store and manage files. A **print server** is used to manage printers and printing tasks. Similarly, **network server** manages network resources.

Advantages

Some important advantages of client-server model are as follows:

- It reduces the volume of data traffic on the network.
- It also provides faster responses to the clients.
- It can use less powerful computers as clients because most of the processing is done by the server computer.

Disadvantages

- It is expensive model because server computers are costly.
- The operations stop all over the network when server goes down.

2. Peer-to-Peer Model

All computers in peer-to-peer model have same status. There is no server computer to control other computers. Each computer in this network can have access to the devices and files on the other computers. Each computer independently store its own software and information.

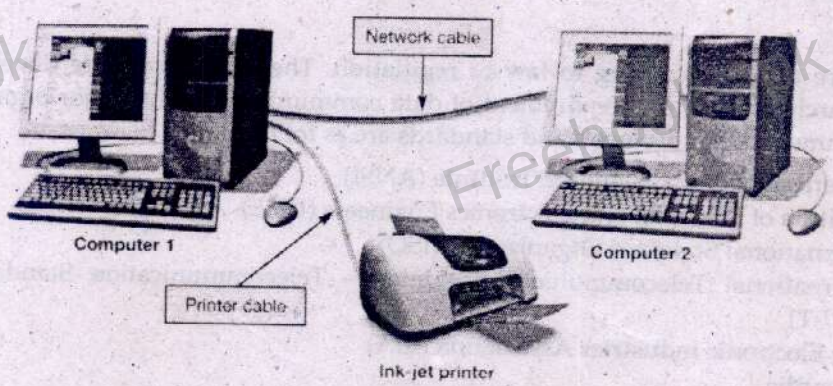


Figure: Pee-to-Peer Model

Advantages

Some important advantages of peer-to-peer model are as follows:

- It is easy to setup.
- It is easy to maintain.
- It does not require expensive server computer.
- It is suitable for small office of ten or less computers.

Disadvantage

The main disadvantage of this model are as follows:

- Heavy use can slow down the network speed.
- It also provides less security of data because files are stored at different locations in the network.

Hybrid Model

Hybrid model is a combination of client/server model and peer-to-peer model. Many networks use a mixture of both network models. This model can provide the advantages of both models.

Q. What is network standard? Discuss different types of network standards. Which organizations define these standards?

The standards are the documents that contain technical and physical specifications about the network being designed. The networks can be reliable and efficient by following certain standards.

Types of Network Standards

The two types of network standards are as follows:

1. De Facto standard
2. De Jure standard

1. De Facto

De Facto means **by tradition** or **by facts**. These standards are developed without any formal planning. These standards come into existence due to historical developments. These standards are still being used by many organizations in the world. **SNA** is an example of De Facto standard.

2. De Jure

De Jure means **according to law** or **regulation**. These standards are developed with proper research to fulfill the requirement of data communication. The major organization to develop communication protocols and standards are as follows:

- American National Standard Institute (ANSI)
- Institute of Electrical and Electronics Engineers (IEEE)
- International Standard Organization (ISO)
- International Telecommunications Union – Telecommunication Standards Sector (ITU-T)
- The Electronic Industries Association (EIA)
- Telcordia

Q. What is network topology? Write the names of topologies.

A network can be configured or arranged in different ways. The physical layout or arrangement of connected devices in a network is called **topology**. It is the shape of a network. Different network topologies are as follows:

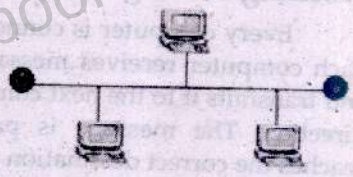
1. Bus Topology
2. Ring Topology
3. Star Topology
4. Tree Topology
5. Mesh Topology

Q. What is bus topology? Explain its working with diagram. Discuss its advantages and disadvantages.

Bus topology is the simplest type of network. It supports a small number of computers. In bus topology, all computers or network nodes are connected to a common communication medium. This medium is often a central wire known as **bus**. The **terminators** are used at the end of a bus to absorb signals. A collision can occur in bus topology if two computers transmit data at same time. Bus topology is mostly used in peer-to-peer networks.

Working of Bus Network

The sending computer sends the data and destination address through the bus. The data and address move from one computer to the other in the network. Each computer checks the address. If it matches with the address of a computer, the computer keeps the data. Otherwise the data moves to the next computer.



Advantages

1. It is simple and easy to use.
2. It requires small length of cable to connect computers.
3. It is less expensive.
4. It is easy to extend a bus. It allows more computers to join network.
5. If one node fails, it does not affect the rest of the network.

Disadvantages

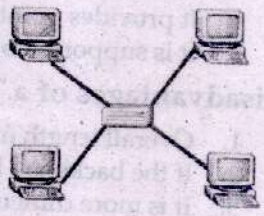
1. It is difficult to troubleshoot.
2. It only supports small number of computers.
3. The network speed slows down as the number of computers increases.

Q. What is star topology? Explain its working with diagram. Discuss its advantages and disadvantages.

All computers in star topology are connected with central device called hub. Star topology is mostly used in client-server networks.

Working of Star Network

The sending computer sends the data to hub. The hub sends data to the receiving computer. Each computer in star network communicates with a central hub.



Advantages

1. It is easy to maintain and modify network.
2. Adding or removing computers can be done without disturbing the network.
3. Finding faults becomes very simple.
4. Single computer failure does not bring down the whole network.
5. It is more flexible than other topologies.

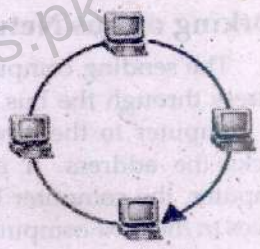
Disadvantages

1. If central hub fails, the entire network breaks down
2. It requires a large length of cable to connect computers.
3. It is more expensive.

Q. What is ring topology? Explain its working with diagram. Discuss its advantages and disadvantages.

In ring topology, each computer is connected to the next computer with the last one connected to the first. Thus, a ring of computers is formed.

Working of Ring Network



Every computer is connected to next computer in a ring. Each computer receives message from the previous computer and transmits it to the next computer. The message flows in one direction. The message is passed around the ring until it reaches the correct destination computer.

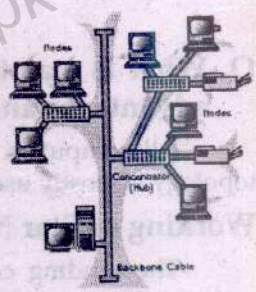
Advantages

1. It is less expensive than star topology.
2. Every computer has equal access to the network.

Disadvantages

1. Failure of one computer in the ring can affect the whole network.
2. It is difficult to troubleshoot.
3. Adding or removing computers affect the whole network

Q. What is tree topology? Explain its working with diagram. Discuss its advantages and disadvantages.



A **tree topology** combines the characteristics of bus and star topologies. It consists of different groups of computers attached in star topology. The groups are then connected to a bus backbone cable. Tree topology is used for the expansion of an existing network.

Advantages of a Tree Topology

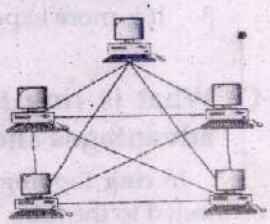
1. It provides point-to-point wiring for individual segments.
2. It is supported by several hardware and software vendors.

Disadvantages of a Tree Topology

1. Overall length of each segment is limited by the type of cabling used.
2. If the backbone line breaks, the entire segment goes down.
3. It is more difficult to configure and wire than other topologies.

Q. What is mesh topology? Explain its working with diagram. Discuss its advantages and disadvantages.

In a **mesh topology**, every device in the network is physically connected to every other device in the network. A message can be sent on different possible paths from source to destination. Mesh topology provides improved performance and reliability. Mesh networks are not used much in local area networks. It is mostly used in wide area networks.



Advantages

1. The use of dedicated link guarantees that each connection can carry its own data load. It eliminates traffic problem.
2. If one link becomes unusable, it does not harm the entire system.
3. It is easy to troubleshoot.

Disadvantages

1. A full mesh network can be very expensive.
2. It is difficult to install and reconfigure.

Q. Explain devices used to connect networks of computers.

Different devices to connect networks of computer are as follows:

1. Router 2. Gateway 3. Bridges

Routers

A **router** is a device that connects multiple networks that use similar or different protocols. It manages the best route between any two communication networks. It consists of hardware and software. The hardware can be a network server or a separate computer. The software includes operating system and routing protocol.

Routers are used when several networks are connected together. They can connect networks of different countries. They transfer data in less time.

Gateway

Gateway is a device that connects two or more networks with different types of protocols. Two different types of networks require a gateway to communicate with each other. It receives data from one network and converts it according to the protocol of other network. For example, the computers on a LAN require gateway to access the Internet.

Bridges

Bridge is a device that connects two network segments. It is used to connect similar types of networks. When a bridge receives a signal, it determines the segment where the signal should be sent. It reads the addresses of sending and receiving computers. If both computes are in the same segment, bridge does not pass the signal to the other segment. It reduces network traffic and increases network performance.

Q. What is LAN? Where is it used? Discuss its uses and advantages.

LAN stands for **Local Area Network**. It is the most common type of network. It covers a small area. It usually connects the computers and other devices within one office or a building or group of buildings. LAN is often used to share resources such as printers, hard disks and programs.

LAN can transmit data at a very high speed. Data transmission speeds of LAN are typically from 10 Mbps to 1000 Mbps. It is much faster than data transmission over a telephone line. LAN can transmit data in a limited distance. There is also a limit on the number of computers that can be attached to LAN.

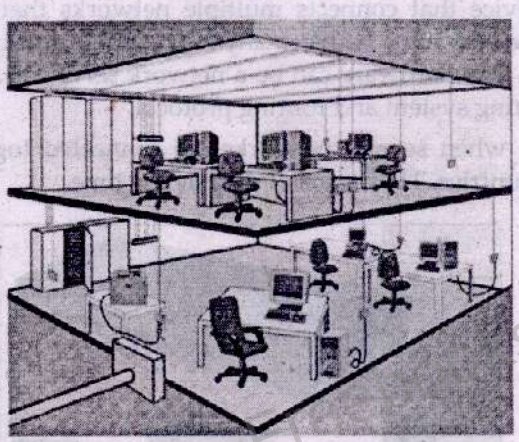


Figure: Local Area Network

Example

- The network in a computer lab of a college is an example of local area network.

Uses and Advantages of LAN

- One copy of software can be shared by all users in a LAN.
- System resources like printers and hard disks can be shared between users in LAN.
- It is easy to manage the data stored on a centralized computer in LAN.
- The data is more secure from being copied or destroyed.
- Data can be shared by all users using LAN.

Q. Explain different components of local area network.

Local area network does not use telephone network. Different components of a local area network are as follows:

1. Communication Media

Communication media is used to transfer data from one computer to another computer. Low-cost LANs are connected with twisted wire pair. Many LANs use coaxial or fiber-optic cables. These cables are expensive but provide faster communication. Some LANs use wireless transmission media. It uses infrared or radio waves to connect computers. Wireless networks are easy to setup and maintain. However, they have low transmission rates and limited distance between two communication devices.

2. NIC

NIC stands for **Network Interface Card (NIC)**. It is also known as **LAN adapter**. It is used to connect a computer to a network. It is a circuit board installed on the motherboard. Now a days, most computer system have a network card built into the motherboard. Each computer on the network must have a network card.

Different types of network cards are available. Wireless network cards have an antenna that sends and receives data.

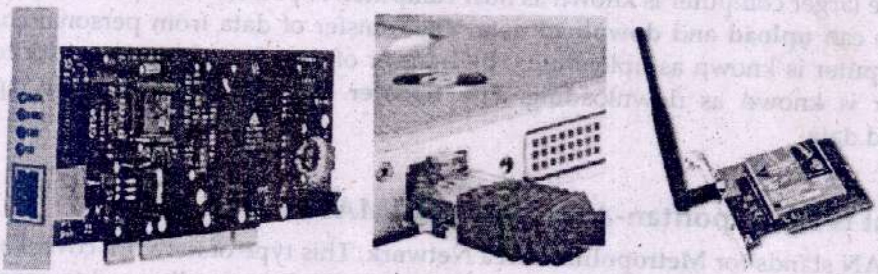


Figure: Network card

3. Bridge

Bridge is a device that connects two network segments. It is used to connect similar types of networks.

4. Router

A router is a device that connects multiple networks using similar or different protocols. It manages the best route between two communication networks. Routers are used when several networks are connected together. They can connect networks of different countries. They transfer data in less time.

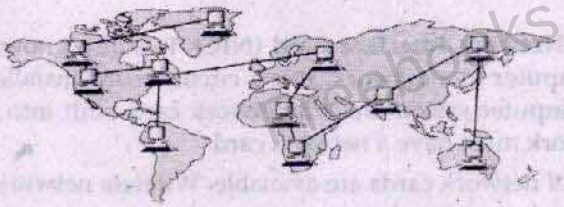
5. Gateway

Gateway is a device that connects two or more networks with different types of protocols. Two different types of networks require a gateway to communicate with each other. It receives data from one network and converts it according to the protocol of other network. For example, the computers on a LAN require gateway to access the Internet.

Q. What is WAN? Where is a WAN used?

WAN stands for **Wide Area Network**. This type of network covers a large area. It connects computers and other devices in different cities and countries. WAN usually consists of several LANs connected together. Computers in WAN are often connected through telephone lines. They can also be connected through leased lines or satellites. WAN can reach the parts of the world which are not accessible with LAN. The transmission rate of WAN is typically from 56Kbps to 50Mbps. WAN is expensive than LAN. WAN is not as fast as LAN. The Internet is the largest WAN in the world.

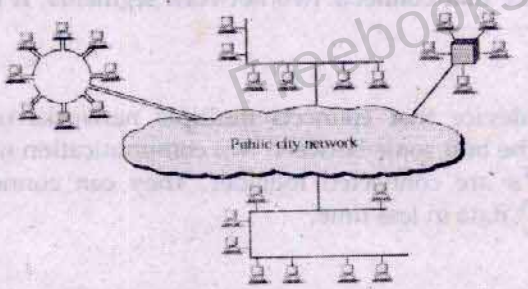
The mainframe and minicomputers used in WAN are designed to be accessed by terminals. A personal computer must appear as a terminal to communicate with large computers in WAN. **Terminal emulation software** is used to allow a personal computer to appear as a terminal. In this way, the personal computer can connect to a larger computer.



The larger computer is known as **host computer**. A personal computer attached to host computer can **upload** and **download** data. The transfer of data from personal computer to host computer is known as uploading. The transfer of data from host computer to personal computer is known as downloading. **File transfer software** is used to do upload and download data.

Q. What is Metropolitan-Area Network (MAN)?

MAN stands for **Metropolitan Area Network**. This type of network covers an area of a city. A MAN is larger than LAN but smaller than WAN. It is usually used to connect two or more LANs in a city. Telephone companies, cable television operator and other organizations provide users with connections to MAN.



Example

The network connecting different branches of a company in same city is an example of metropolitan area network.

Q. What is difference between LAN and WAN?

The difference between LAN and WAN is as follows:

LAN	WAN
1. LAN is used to connect computers at one place.	1. WAN is used to connect computers anywhere in world.
2. LAN covers limited area.	2. WAN can cover more distance.
3. Data transfer speed is very fast in LAN. Its speed is typically from 10Mbps to 1000 Mbps.	3. Data transfer speed is slow in WAN. Transmission rates are typically 56Kbps to 50Mbps.
4. LAN is less costly.	4. WAN is expensive.
5. LAN is usually connected through wires.	5. WAN is usually connected through telephone lines.

6. The connection in a LAN is permanent using wires.	6. The connection in WAN is not permanent.
7. LAN is used to share files and hardware like printers, modem.	7. WAN is used to share only data and information i.e. email & file.
8. LAN has less possibility of data transmission error.	8. WAN has higher possibility of data transmission error.
9. In LAN, problems normally occur due to cable disturbance by end user.	9. In WAN, problem normally occurs due to communication problems in medium.

Q. What is network protocol? Discuss different LAN protocols.

Network Protocol

Network protocol or **communication protocol** is a set of rules for exchanging information between computers on a network. The devices in a network cannot communicate without a protocol.

Types of LAN Protocols

Different LAN protocols are as follows:

1. Ethernet

Ethernet is the most commonly used LAN protocol. It uses a high-speed network cable and bus topology. It is inexpensive and easy to install and manage. All computers in Ethernet use same cable to send and receive data. They must follow same rules for communication. If two or more computers transmit data at same time, the messages can be lost. A computer checks if the cable is in use before transmitting data. The computer waits if the cable is being used. It starts transmitting data when the cable is free. This process is also called **CSMA/CS (Carrier Sense Multiple Access with Collision Detection)**.

2. Token Ring

Token ring is also a LAN technology. It allows network devices to access the network by passing a special signal called **token**. Token is like a ticket. A device can transmit data over the network only if it has a token. Only one token is available in one network. That is why no collision can occur. But the data transmission rate is slow. When a computer wants to send a message, it:

1. Gets the token
2. Puts the data in the token
3. Adds the address of receiving computer

Token ring is based on ring topology but can also be used in star topology. The token passes from computer to computer. The computer whose address matches with the address stored in the token gets the data. It then returns the message to the sending computer to indicate that the data has been received.

3. ARCnet

ARCnet stands for **Attached Resource Computer Network**. It is a LAN protocol. It was introduced in 1977. It uses twisted-pair, coaxial cable and fiber-optic media. ARCnet uses star, bus or combination of these topologies.

The original ARCnet protocol was very slow. It supported transmission rates of 2.5 Mbps. It became popular because it was inexpensive and reliable. It is also easy to setup and expand. **Fast ARCnet** increased the transmission rate to 100 Mbits per second.

Q. Write short note on TCP / IP.

TCP / IP stands for **transmission control protocol / Internet protocol**. It is the protocol used by every computer on Internet. A protocol is a set of rules and procedures that defines how computer receive and transmit data over the network.

TCP/IP ensures reliable connection between different computers that communicate over Internet. It is used to identify every computer on the Internet separately.

TCP/IP software is different for different computers but provides same interface to the network. Two different types of computers can communicate with each other using this protocol. For example, a personal computer can exchange data with mainframe computer over the Internet by using TCP/IP.

Q. What are various lines for communication over telephone network?

Different lines for communication over telephone network are as follows:

1. ISDN

ISDN stands for **Integrated Services Digital Network**. It is a set of standards for digital transmission of data over standard copper telephone lines. One telephone line can carry three or more signals at one time using the same line. ISDN requires ISDN modem at both sides. ISDN modem is different from dial-up modem.

2. DSL

DSL stands for **digital subscriber line**. It provides high-speed data transmission over existing telephone lines. The existing telephone lines are analog. That is why, DSL modem is required to connect to DSL. DSL is easier to install than ISDN and is also faster.

Q. Briefly discuss different methods of Ethernet to access network.

Different access methods used by Ethernet to access a network are as follows:

1. CSMA/CD

It is a local area access method. It resolves the contention between two or more stations by **collision detection**. If two stations transmit data at the same time, they both stop and generate a signal that a collision has occurred. Each station waits for a specified time and then retransmits. Each stations waits for random period of time to avoid another collision.

2. CSMA/CS

In this method, a node listens to the bus for a specified time before transmitting. It waits until the node has completed the transmission.

3. CSMA/CR

It allows multiple devices to talk at the same time. A protocol is used to determine the priority of a device.

Q. What is Internet?

Internet is a huge collection of computers all over the world that are all connected to one another. It is a global network of computers. These computers are connected through different telecommunications links like:

- Phone lines
- Fiber optics lines
- Satellites and wireless connections

Internet is used to find information stored on the computers called **hosts** or **servers**. These computers use a common protocol called TCP/IP for communication. **TCP/IP** stands for **Transmission Control Protocol / Internet Protocol**. Each computer connected to the Internet can act as host. A host computer provides information to the people.

People can find information about books, magazines, encyclopedia and other types of material on the Internet. They can get expert opinions on any topic. They can also communicate with world community on different subjects. The Internet has made this world a **global village**.

Q. Briefly describe the history of Internet.

The work on Internet was started in 1960s during the cold war of Russia and America. America wanted to communicate with its Armed Forces. A network of four computers was developed in the beginning.

The project was handed over to **DARPA (Defense Advanced Research Project Agency)**. DARPA started connecting computers at different universities and defense companies.

Different universities and research organizations also started the development of their own networks to share information and data with other people. After a few years, all networks of universities and research organizations were connected by DARPA with each other to make the world's biggest network. This network is now known as Internet.

In 1989, all previous networks were replaced by **NSFNET** of **National Science Foundation**. The Internet facility was now available to common people.

Q. Explain how Internet can be useful. OR Explain the services of Internet?

Internet provides various facilities and uses for users. Some facilities are:

1. World Wide Web (WWW)

www is a collection of millions of websites. A websites contains different web pages containing information. www organizes this information in such a way that users can easily search and access the required information.

2. Email

Email stands for **Electronic Mail**. Email is the exchange of messages and files using Internet. Message can be in the form of graphics, sounds, video clips or simple text. It is a fast way of sending messages anywhere in the world in a very short time.

3. Telnet

TELNET is a program that is used to connect to a remote computer on Internet. A computer can act like a terminal directly linked to the remote computer. It allows a user to logon to a remote computer. The user can logon to the computer and use it as if he is connected to the computer directly.

4. File Transfer Protocol

File Transfer Protocol is used to transfer files over the Internet. Audio, video, graphics and data files can be uploaded or downloaded using this protocol.

The process of transferring a file from remote computer to local computer is called **downloading**. The process of transferring a file from a local computer to remote computer is called **uploading**. Different software are available to use this protocol for transferring files on the Internet. **CuteFTP** and **WS_FTP** are examples of FTP software.

5. Gopher

Gopher is a menu-based system for exploring the Internet and its resources. It provides the facilities of search and file retrieval on the Internet. It organizes resources in such a way that finding information becomes easier on the internet.

6. Chat Groups

Chatting is a process of exchanging views on the Internet by typing text messages. Many users join chat groups for exchanging views. **Chat group** is a group of users with similar interest. The users can interact with one another in real-time. It means that they are online at the same time.

7. Intranet

Intranet is a private and secure business network. It uses Internet technology to provide information to the employees of the organization. The information can be protected from unauthorized users. It is designed to meet the internal needs for sharing information within a single organization or company

8. Extranet

Extranet is a collection of two or more intranets. It can be accessed by authorized users from outside the organization. Different organizations can use extranet to share the information of their intranets. An organization can apply security measures to provide limited access to the employees of other organization using the extranet.

Q. What is difference between intranet and extranet?

The difference between intranet and extranet is as follows:

Intranet	Extranet
1. Intranet contains the information of one organization.	1. Extranet may have the information of two or more organizations.
2. Intranet is used to provide information to the employees.	2. Extranet is used to share information with other organizations.

Q. What is Email? Explain its advantages.

Email stands for **Electronic Mail**. Email is the exchange of messages and files through Internet. Message can be in the form of graphics, sounds, video clips or simple text. It is a fast way of sending messages anywhere in the world in a very short time.

The sender and receiver may be sitting in the same building or anywhere in the world. One email message can be sent to many people. Email facility is provided by many Internet Service providers or specialized websites. **Yahoo, Hotmail** and **Gmail** are some popular examples of email providing websites.

Advantages and Uses of Email

Some advantages of email are as follows:

- It is very fast and timely.
- It is very cheap and inexpensive.
- People can send and receive message anywhere in the world.
- People can share information.
- It is possible to send and receive email through mobile phone.
- Email gives us the facility to send pictures, sounds and videos.
- Email message does not disturb the recipient. It is stored on a server and can be read at any time.

Q. Write a short note on HTTP.

HTTP stands for **Hyper Text Transport Protocol**. It is a communication protocol used to connect to servers on the World Wide Web. The primary function of HTTP is to establish a connection with a Web server and transmit HTML pages to the user's browser. It allows computer users to access the Internet.

Q. What is an OSI Model? Write the names of layers in this model. Draw and label OSI Model.

OSI stands for **Open System Interconnection**. An **open system** is a model that allows any two systems to communicate even if their architectures are different. OSI model was developed by **International Standards Organization (ISO)** in 1983. It provides a logical framework for data communication processes to interact across networks. The standards were created for computer industry to allow different networks to work together efficiently.

OSI model consists of seven layers. Each layer performs a specific function in network communication. The layers are divided into two groups:

- **Upper Layer:** The upper layers focus on user applications and how files are represented on computers before transfer.
- **Lower Layer:** The lower layers are concerned with how the communication across a network actually occurs.

Different Layers of OSI Model

OSI model consists of seven layers that are as follows:

7. Application Layer
6. Presentation Layer

5. Session Layer
4. Transport Layer
3. Network Layer
2. Data Link Layer
1. Physical Layer

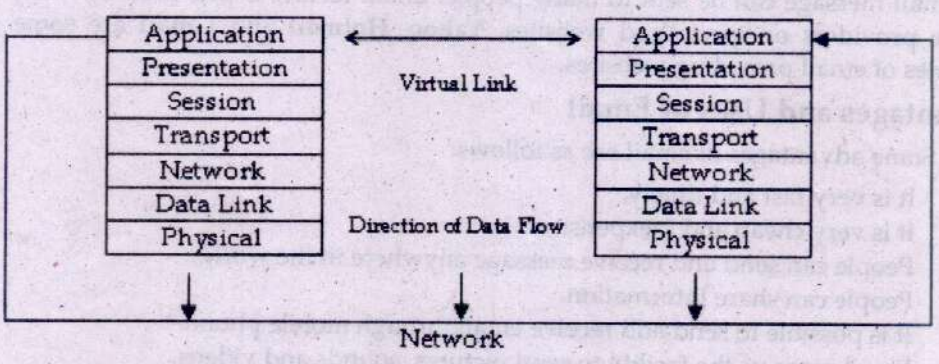


Figure: OSI Model

Q. Briefly describe the function of application layer in OSI model.

The application layer is the top-most layer of OSI model. It provides services directly to user applications. It enables the user to access the network. It provides user interfaces and support for services such as email, remote file access and transfer, shared database management, and other types of distributed information services.

- **File Transfer:** It allows a user to access, retrieve and manage files in a remote computer.
- **Mail Services:** It provides the basis for email forwarding and storage facilities.
- **Directory Services:** It provides distributes database sources and access for global information about various objects and services.

Q. Explain the function of presentation layer in OSI model.

The presentation layer performs data reformatting, data compression and encryption.

- **Data Reformatting:** When two computers exchange data, the data is changed to bit streams before it is transmitted. The computers may use different encoding techniques. The presentation layer at sending computer changes data according to the sender's format. The presentation layer at receiving computer changes data according to the receiver's format.
- **Encryption:** The presentation layer encrypts data before transmission. It means that the sender transforms the original information to another form and sends resulting message over the network. The receiver again transforms the message back to its original form. It is called **decryption**.
- **Compression:** Data compression reduces the number of bits to be transmitted. The presentation layer compresses a large amount of data into small size.

Q. What is the function of session layer works in OSI model?

The session layer establishes, manages, and terminates user connections. A session is an exchange of messages between computers. It synchronizes user tasks.

Synchronization involves the use of **checkpoints** in data stream. If a failure occurs, only the data from the last checkpoint is retransmitted. Suppose we want to send 1000 pages of data. Checkpoint can be used after each 100 pages. If there is an error at page 320, the pages from 301 will be retransmitted. Page from 1 to 300 will not be retransmitted.

Q. Explain the function of transport layer.

The transport layer controls the flow of data. It ensures that messages are delivered error free. It divides large messages into small packets for efficient transmission. These packets are reassembled, checked for errors and acknowledged at receiving side. If there are errors in transmission, the data is retransmitted.

Q. Write a note on the function of network layer.

The network layer is responsible for establishing, maintaining, and terminating network connections. It manages the delivery of data from source to destination.

Network layer determines logical path between sender and the receiver. There may be many networks between two computers. This layer manages to send data from source computer to the destination computer.

Q. What is the function of data link layer?

The **Data Link Layer** is responsible for the reliability of the physical link established at layer 1. Data link layer must decide the following:

- **Framing:** The data link layer divides the stream of bits into manageable data units called frames.
- **Flow Control:** The rate of sending data can be more than the rate of receiving data. Data link layer imposes flow control mechanism to prevent it.
- **Error Control:** The data link layer detects and retransmits damaged or lost frames. It also prevents the duplication of frames.
- **Access Control:** If two or more devices are connected to the same link, data link layer determines which device has control over the link at a given time.

Q. Briefly describe the function of physical layer.

The Physical layer is the bottom layer of the OSI model. It transmits stream of bits and defines how the data is transmitted over the network and what control signals are used. Its main function is to control how a stream of bits is sent and received over the physical medium. Physical layer must decide the following:

- **Characteristics of Media:** The physical layer defines the characteristics and type of transmission medium.

- **Representation of Bits:** The bits are encoded into electrical signals for transmission. The physical layer defines the type of **encoding**.
- **Data Rate:** Physical layer defines the number of bits that will be sent in each second.
- **Transmission Mode:** The physical layer defines the direction of transmission between two devices: simplex, half-duplex or full-duplex.

Short Questions

Q.1. Define computer network.

A computer network is a set of two or more computers connected together in order to share information and other resources. The computers in a network are connected with one another through cables, satellite or telephone lines. It is also called information network.

Q.2. Write three essential components of every network system.

Three essential components of every network system include hardware, software and people.

Q.3. Give three general reasons for the importance of computer networks.

Networks are used to share computer hardware. It reduce costs and make it possible to take advantage of expensive computer equipment. Networks are also used to share data and programs that increases productivity. Networks are also used to communicate with different people all over the world easily.

Q.4. Define telecommunication.

Telecommunication is a process of transferring information over a distance via radio waves, optical signals or transmission line

Q.5. List some benefits of computer networks.

Some important benefits of computer networks are information & resource sharing, money saving and easy communication.

Q.6. What is workgroup computing?

Workgroup is group of persons working together on a particular task by sharing information through a computer network. The process of sharing information by using a computer network is called workgroup computing or **collaborative computing**.

Q.7. Name different types of network models.

There are two models of computer networks. These are client/server model and peer-to-peer model.

Q.8. Define the term server.

Server is a special type of computer. It is used to control the whole network. The server performs most of the processing in client/server network model.

Q.9. Define the term client.

A **client** is a computer in the network that depends on the server for its resources. The client computer sends request to the server for resources. The server computer provides the requested resource to the client computer.

Q.10. Describe client/server model.

Client-server model is a network in which one or more computers work as **servers** and other computers work as **clients**. The client computer requests a service from the server computer. The server computer provides the requested service to the client computer.

Q.11. Define dedicated server.

A dedicated server is used to perform a specific task. For example, Print server is used to manage printers and print jobs. Database server is used to manage network traffic. File server is used to store and manage files.

Q.12. What do you know about peer-to-peer model?

All computers in peer-to-peer model have same status. There is no server computer to control other computers. The files and peripheral devices are distributed across several computers. The users can share data and devices of different computers in the network.

Q.13. How is peer-to-peer network different from client/server?

In a peer-to-peer network, each computer can communicate directly with other computers on the network. Therefore, each computer plays the role of a server with respect to the other computers that have access to it over the network.

Q.14. What do you know about hybrid model?

Hybrid model is a combination of client/server model and peer-to-peer model. Many networks use a mixture of both network models. It can provide advantages of both models.

Q.15. Define standard.

The standards are the documents that contain technical and physical specifications about the network being designed. The networks can be reliable and efficient by following certain standards.

Q.16. Describe De Facto standard.

De facto means **by tradition** or **by facts**. These standards are developed without any formal planning. These standards come into existence due to historical developments. These standards are still being used by the organizations all over the world.

Q.17. Describe De Jure standard.

De Jure means according to law or regulation. These are the standards which have been properly approved by networkings governing body. These are developed with proper research and design to fulfill the requirement of data communication.

Q.18. Distinguish between de facto and de jure standards.

De facto standards are developed without any formal planning. De Jure standards are properly approved by networkings governing body. These are developed with research and design to fulfill the requirement of data communication. Many de facto standards become de jure standards when analyzed and improved by industry standards associations.

Q.19. Name different types of LAN topologies

Three types of LAN topoloties are star topology, ring topologies, bus topology, tree topology and mesh topology.

Q.20. Define the term network topology.

The physical layout or the way in which network connections are made is called a topology. It refers especially to locations of computers and how the cable runs between them. Bus, Ring and Star are examples of network topologies.

Q.21. What is Bus topology?

Bus topology is the simplest type of network. It supports a small number of computers. In bus topology, all computers are connected to a common communication medium. This medium is often a central wire called bus. It is mostly used in peer-to-peer networks

Q.22. How does star topology work?

All computers in star topology are connected with central device called hub. The sending computer sends the data to hub. The hub sends data to the receiving computer. Each computer in star network communicates with a central hub. If hub fails, the whole network become useless.

Q.23. Why star topology is the best topology?

Star toplogy is the best LAN topology. Scalability and reliability of star topology makes it the best topology than others. It is easy to remove or add a device in this topology. It is easier to troubleshoot than other topologies.

Q.24. Distinguish among star, ring and bus topologies.

In star network topology, each computer is directly connected to every other computer on the network. In a ring network topology, all computers form a ring. In a bus network topology, all computers are connected to a common communication medium called bus. A star topology includes a central device or hub to connect all computers together. Ring topology uses token passing and bus topology uses Ethernet.

Q.25. Differentiate between a bus topology and a star topology.

A bus topology usually uses one or more pieces of cable to form a single line or bus. A star topology includes a central device or hub to connect all computers together. Star topology is more expensive to implement than bus topology.

Q.26. What is Ring topology?

In this topology, each computer is connected to the next computer with the last one connected to the first. This topology forms a circle. All computer in ring topology have equal access to the network.

Q.27. Differentiate between bus topology and ring topology.

In a ring network topology, all computers form a ring. In a bus network topology, all computers are connected to a common communication medium called bus. Ring topology is difficult to troubleshoot but bus topology is easy to troubleshoot. The speed of ring topology is higher than bus topology.

Q.28. Define the term token.

A short message that travels around the communication medium is called token. Token is used to send and receive data over a network.

Q.29. Identify three devices that pass messages between networks.

Three devices that pass messages between networks include bridges, gateways and routers.

Q.30. State the use of repeater.

Repeater is a device that is used to boost the signal. A Every communication media can transmit signal to a limited distance. Signals have to be amplified in order to be transmitted further. Repeaters are used to transmit signal beyond the limit of communication media.

Q.31. State the purpose of bridges.

Bridge is a device that connects two network segments. It is used to connect similar types of networks. A bridge reduces network traffic and increases network performance.

Q.32. State the purpose of router.

Router is a device that connects multiple networks using similar or different protocols. It manages the best route between any two-communication networks. Routers are used when several networks are connected together.

Q.33. What are gateways?

Gateway is a device that connects two or more networks with different types of protocols. Two different types of networks require a gateway to communicate with each other. For example, the computers on a LAN require gateway to access the Internet.

Q.34. What is local area network (LAN)?

LAN is the most common type of network. LAN stands for **Local Area Network**. It covers a small area. Most LANs are used to connect computers in a single building or group of buildings. Hundreds or thousands of computers may be connected through LAN.

Q.35. Write some common uses of LANs.

LAN or Local Area Network is commonly used to interconnect computers and other peripheral devices in an office, a building or student laboratory.

Q.36. List different components of LAN.

Different components of LAN are communication media, network interface card, bridge, router and gateway.

Q.37. What is the use of network interface card?

It is abbreviated as NIC. It connects each computer to the wiring in the network. It is a circuit board that fits expansion slot. It handles sending, receiving and error checking of data transmission.

Q.38. Write the names of different LAN protocols.

Different LAN protocols are Ethernet, Token ring and ARCnet.

Q.39. What is the use of Ethernet?

Ethernet is a LAN technology. It is based on bus topology but Ethernet network can be wired in star topology also. It is the most popular LAN because it is inexpensive and easy to install and manage.

Q.40. What is the use of token ring?

Token ring is also a LAN technology. It allows network devices to access the network by passing a special signal called **token**. Token is like a ticket. A device can transmit data over the network only if it has a token.

Q.41. What is ARCnet?

ARCnet stands for **Attached Resource Computer Network**. It is both a topology and networking technology. It uses twisted-pair or coaxial cable. Original ARCnet protocol was slow. It became popular as it was inexpensive, reliable and easy to setup and expand.

Q.42. Explain wide area network (WAN).

WAN stands for **Wide Area Network**. It refers to a network that covers a large area. WAN connects computers in different cities, countries and continents. WAN can reach the parts of the world that is not possible with LANs

Q.43. Write the most distinctive difference between LAN from WAN.

The most distinctive difference is the distance that is spanned by the network.

Q.44. Compare LAN and WAN transmission speeds.

LAN transmission speeds are typically 10 Mbps to 100 Mbps. In contrast, most WAN communication links operate from 56 kbps to a few megabits per second.

Q.45. How are WANs different from MANs and LANs?

WAN is one of the oldest kinds of data communication networks. WAN typically covers a wide geographical area. It interconnects networks located at geographically distributed sites. Its transmission speed is lower than those for LANs and MANs.

Q.46. Differentiate among LAN, MAN and WAN.

LANs use direct cabling, wireless radio or infrared signals to connect computers in a small area. MANs use high-speed fiber-optic lines to connect computers located at various places in a major urban region. WANs use long-distance transmission media such as phone lines, microwave transmissions or satellites.

Q.47. How does CSMA/CD work?

It is a local area access method. It resolves contention between two or more stations by collision detection. If two stations transmit data at same time, both stop and generate a signal that collision has occurred. Each station waits for specified time and then retransmits.

Q.48. Define CSMA/CS.

In this method, a node listens to the bus for a specified time before transmitting. It waits until the node has completed the transmission.

Q.49. Define CSMA/CR.

It allows multiple devices to talk at the same time. A protocol is used to determine the priority of a device.

Q.50. Define TCP/IP.

TCP/IP stands for Transmission Control Protocol/Internet Protocol. This protocol is used to share and transfer data among different networks. This is the most commonly used protocol over the Internet.

Q.51. Describe communications software.

Communication software consists of programs used to establish connection to another computer or network and manage the transmission of data, instructions and information.

Q.52. Define WWW.

WWW stands for **World Wide Web**. It is also called Web. It provides the facility to publish information on Internet. It is a collection of documents stored on computers permanently connected with Internet around the world.

Q.53. State the purpose of FTP.

FTP stands for **File Transfer Protocol**. It is used on Internet to send files from one place to another. Audio, video, graphics and data files can be uploaded or downloaded using FTP.

Q.54. What is Gopher?

Gopher is an access and retrieval system. It covers wide range of information. It consists of reference material, magazine articles, government documents and speeches etc.

Q.55. Which software application is used to navigate World Wide Web?

These software applications used to navigate World Wide Web is called Web browser.

Q.56. What do you know about OSI model?

OSI stands for **Open System Interconnection**. An **open system** is a model that allows any two systems to communicate even if their architectures are different. It covers all aspects of network communications. OSI model consists of seven layers. Each layer performs a specific function in network communication.

Q.57. List the seven layers of the OSI reference model.

The OSI reference model divides all communication functions into seven standardized layers. From highest to lowest these are: Application, Presentation, Session, Transport, Network, Data Link and Physical.

Q.58. Write the functions of Physical layer of OSI model.

Physical layer is the bottom layer of OSI model. It transmits stream of bits and defines how the data is transmitted over the network and what control signals are used. Its main function is to control how a stream of bits is sent and received over the physical medium.

Q.59. What is Data Link layer of OSI model?

Data Link Layer is responsible for reliability of the physical link established at layer 1. Framing, flow control, error control and access control are the functions of data link layer.

Q.60. Write the functions of network layer.

The network layer is responsible for establishing, maintaining, and terminating network connections. It manages delivery of data from source to destination. It determines logical path between sender and receiver.

Q.61. State the purpose of transport layer.

The transport layer controls the flow of data. It ensures that messages are delivered error free. It divides large messages into small packets for efficient transmission. These packets are reassembled, checked for errors and acknowledged at receiving side. If there are errors in transmission, the data is retransmitted.

Q.62. What errors does the transport layer usually fix?

The transport layer usually fixes all errors created at the transport layer or lower layers.

Q.63. Distinguish between frames and packets.

Frames are messages in single networks. Packets are messages that are sent through the Internet. In each network, the packet is carried in a frame limited to that network.

Q.64. Name and describe the functions of OSI Layer 5.

OSI Layer 5 is the **OSI session layer**. The session layer establishes, manages, and terminates user connections. A session is an exchange of messages between computers. It synchronizes user tasks.

Q.65. Name and describe the functions of OSI Layer 6.

OSI Layer 6 is the **OSI presentation layer**. The presentation layer performs data reformatting, data compression and encryption. It is concerned with how data is converted and formatted for data transfer. Examples of format conversions include ASCII text for documents and .gif and .jpg for images.

Q.66. What is the purpose of application layer?

The application layer is the top-most layer of OSI model. It provides services directly to user applications. It enables the user to access the network. It provides user interfaces and support for services such as email, remote file access and transfer, shared database management, and other types of distributed information services.

Q.67. What do application layer standards govern?

Application layer standards govern how two applications work with each other even if they are from different vendors.

Q.68. Is the Internet a single network?

The Internet is not a single network. Rather, it consists of tens of thousands of networks around the world.

Q.69. What are hosts on the Internet?

The computers connected to the Internet are called hosts.

Q.70. Differentiate between the Internet and web?

The Internet is the physical connection of millions of networks. The Web uses the Internet for its existence. The Web consists of hypertext embedded on Web pages that are hosted on Web sites.

Q.71. Define Intranet.

Intranet is a private and secure business network. It uses Internet technology to provide information to the employees of the organization. The information can be protected from unauthorized users.

Q.72. Define Extranet.

Extranet is a collection of two or more intranets. Different organizations can use extranet to share the information of their intranets. An organization can apply security measures to provide limited access to the employees of other organization using the extranet.

Q.73. Can intranets and extranets use the Internet for transmission?

Yes, both intranets and extranets may use the Internet for transmission needs

Q.74. Explain the difference between intranet and extranet.

Intranet contains the information of one organization. Intranet is used to provide information to the employees. Extranet may have the information of two or more organizations. Extranet is used to share information with other organizations

Q.75. State the purpose of terminal emulation software.

Terminal emulation software is used to allow a personal computer to appear as a terminal in WAN. In this way, the personal computer can connect to a large computer.

Q.76. Define host computer.

A larger computer used to store web pages on the Internet is known as **host computer**.

Multiple Choice

1. **A collection of computers connected together is called:**
   a. Processing b. Network c. Chatting d. Centralized system
2. **The technology of long-distance communication is known as:**
   a. Mass communication b. Telephony c. Telecommunications d. None
3. **Which of the following is NOT a benefit of computer networks?**
   a. Reduce hardware costs b. Connect people
   c. Enable shared applications d. Produce high quality programs
4. **A computer network must contain at least this number of computers:**
   a. Two b. Twenty c. A few d. Hundreds
5. **Each computer on a network is called a:**
   a. Bus b. Terminator c. Node d. None
6. **Companies that use networks can save time and money because networks allow users to share:**
   a. Hardware devices b. Software programs c. Information d. All

7. **Many networks include a central computer that may be called:**
   a. Server b. Bridges c. Gateways d. Client
8. **A device used to connect two computers lying in same office or building is called:**
   a. Ethernet Card b. Graphics Card c. Modem d. Sound Card
9. **Which of the following is not a category of network?**
   a. WAN b. LAN c. MAN d. NAN.
10. **LAN stands for:**
   a. Local area nodes. b. Logical arrangement of networks.
   c. Local area network. d. Linked-area network.
11. **A network that covers a limited geographic distance such as an office is called:**
   a. Centralized network b. Metropolitan area network
   c. Local area network d. Wide area network
12. **In a traditional LAN, each computer on the network is connected through:**
   a. Cables. b. Satellites. c. Microwaves. d. Wireless transmission.
13. **Which of the following is a component of LAN?**
   a. Cable b. NIC c. Bridge d. All
14. **A LAN is a combination of**
   a. Network adapter cards b. LAN cables c. LAN Application software d. All
15. **Which problem occurs when two workstations on shared Ethernet try to access LAN at the same time?**
   a. Termination b. Deadlock c. Collision d. Concession
16. **A network that covers a large geographic distance such as a country is called a:**
   a. Centralized network. b. Distributed network.
   c. Local area network. d. Wide area network
17. **The primary difference between a LAN and a WAN is:**
   a. The number of software programs available. b. Distance.
   c. The variety of hardware devices. d. The number of hardware devices.
18. **What type of network is the Internet?**
   a. LAN b. MAN c. WAN d. None
19. **In WAN, the communication software that allows a personal computer to appear as terminal is called:**
   a. Electronic mail software b. Teleconferencing software
   c. Terminal emulation software d. Bulletin board system
20. **MAN stands for:**
   a. Metropolitan area network b. Marked area network
   c. Metropolitan arranged network d. Manufactured arrangement of networks
21. **A network that transmits data over citywide distances faster than LAN is:**
   a. WAN b. LAN c. MAN d. NAN
22. **NIC stands for:**
   a. Network internal card. b. Newer industrial computer.
   c. Networking Internet connection. d. Network interface card
23. **NIC allows direct connection to:**
   a. Monitor b. A network c. A printer d. A modem

24. Which is an example of DeFacto standard?
a. ANSI b. ISO c. SNA d. IEEE

25. Which of the following is not a type of protocol?
a. Ethernet b. CCIT c. ARCnet d. FTP

26. Which one is not a De-jure standard?
a. SNA b. IEEE c. ANSI d. ISO

27. Which of the following is an internet protocol?
a. IEEE 802.2 b. IEEE802.3 c. TCP / IP d. MAC

28. Which of the following is a LAN protocol?
a. Ethernet b. Token Ring c. ARCnet d. All

29. How many pairs of computers can simultaneously communicate on Ethernet LAN?
a. 1 b. 2 c. 3 d. Multiple

30. The mostly commonly used LAN protocol is:
a. Ethernet b. Token Ring c. ARCnet d. None

31. The act of listening to the medium for a message is called:
a. Contention b. Carrier sensing
c. Collision d. Transparency

32. A device that is used to connect two computers via an ordinary telephone line is:
a. Ethernet Card b. Graphics Card c. Modem d. Sound Card

33. Which of the following is not a LAN topology?
a. Bus b. Band c. Star d. Ring

34. Which is the most common LAN topology for microcomputer LANs?
a. Bus b. Band c. Star d. Ring

35. The physical layout of a LAN is known as:
a. Topology b. Session c. Link d. Connector

36. A network that places all nodes on a single cable is called:
a. Star b. Ring c. Band d. Bus

37. One or more computers connected to hub computer is called:
a. Ring Network b. Band c. Bus d. Star Network

38. Topology that is used for a small number of computers is called:
a. Star b Bus c. Mesh d. Ring

39. Which of the following topology uses routers?
a. Bus b. Ring c. Mesh d. None

40. FDDI is a:
a. Ring Network b. Star Network c. Mesh Network d. Bus Network

41. Which protocol works on the concepts of ring network topology and a token?
a. Token Ring b. Ethernet c. TCP/IP d. ARCnet

42. A connection for similar networks uses:
a. Bridge b. Gateway c. Both d. None

43. The set of rules to exchange data in a communications network is called:
a. Gateway b. Procedure c. Protocol d. Token

44. Which of the following is a type of protocol except:
a. Ethernet b. Token Bus c. Token Ring d. CCIT

45. Ethernet, Token bus and Token Ring have been defined by:
a. IEEE b. CCIT c. ISO d. Microsoft

46. A short message that travels around the communication medium is called:
a. Ring b. Token c. Star d. None

47. Which of the following protocols were properly researched, designed and finally published as a standard?
a. De facto b. De Jure c. ISO d. CCIT

48. Two dissimilar networks can be connected by a:
a. Gateway b. Bridge c. Bus d. None

49. The ITU was formerly known as:
a. CCIT b. ISO c IBM d. SNA

50. Which of the following is a governing body to approve the network standards?
a. IEEE b. EIA c. ANSI d. All

51. The network configuration that allows every computer to act as client and as well as a server is:
a. Client/server model b. Host system
c. Server network d. Peer-to-peer network

52. The process of copying data from server to a personal computer is called:
a. Uploading. b. Terminal emulation.
c. Downloading. d. Server sharing.

53. A device used to connect similar networks:
a. Gateway b. Bridge c. Both a and b d. None

54. OSI Reference Model has:
a. 7 layers b. 3 layers c.6 layers d. 1 layers

55. The layer that is responsible for establishing, maintaining and terminating a user connection is called:
a. Presentation b. Application c. Transport d. Session

56. The layer that is concerned with addressing and routing is called:
a. Network b. Data Link c. Physical d. Transport

57. Data link have two separate sub-layers:
a. LLC and MAC b. CS and MA c. Token and Ring d. Ethernet

58. The top most layer of the OSI is:
a. Application b. Session c. Transport d. Presentation

59. The bottom layer of OSI Model is:
a. Application b. Physical c. Transport d. Presentation

60. The layer that is used to control how a bit-streams of data is sent and received over the physical medium is called:
a. Application b. Session c. Transport d. Physical

61. The layer that is responsible for flow control and ensuring messages are delivered without error free is called:
a. Application b. Session c. Transport d. Physical

62. The layer that defines the formats the data uses as it in transmitted on the communication line is called:
a. Application b. Presentation c. Transport d. Physical

63. **The layer that provides services that directly support user application:**
a. Application b. Presentation c. Transport d. Physical

64. **OSI stands for:**
a. Open system Interconnection b. Open system international
c. Open Small Internet d. Open system Interlink

65. **What layer of OSI models performs data compression?**
a. Network b. Data Link c. Presentation d. Physical

66. **LAN is a combination of:**
a. Network cards b. LAN cables
c. LAN application software d. All

67. **People on LAN can share:**
a. Printer b. Modem c. CD-ROM/disk Drive d. All

68. **Project 802 defines standard for which layers of the OSI model:**
a. Application and presentation layers
b. Physical and data link layers
c. Transport and network layers
d. Network and data link layers

69. **Terminal is a:**
a. Device to give power supply to computer
b. Point at which data enters or leaves the computer
c. The last instruction in a program
d. Any input /output device

70. **Collection of millions of computer interlinked to each other is called:**
a. Interlink b. Internet c. Collection d. Group

71. **A collection of documents stored on computes permanently connected with Internet around the world is called:**
a. Telnet b. WWW c. LAN d. FTP

72. **A collection of related web pages is called:**
a. Uploading b. Web site c. Downloading d. Linking

73. **FTP stands for:**
a. File Transfer Protocol b. Finis Tele Program
c. Finding Tele Path d. None

74. **FTP Facility is used to:**
a. Transfer Protocol b. Transfer File
c. Connect to the Internet d. Check PC

75. **Services on the Internet include**
a. World Wide Web b. FTP c. E-mail d. All of these

76. **Transferring information from computer to Internet is called:**
a. Downloading b. Down Seizing c. Uploading d. Pasting

77. **Software to peruse the internet is called:**
a. Gateway b. EFT c. Browser d. Teleconferencing

78. **Cabling on a linear bus topology can be extended using which of following?**
a. Terminator b. Barrel connector
c. Network adapter card d. Medium attachment

79. **ISDN stands for:**
    a. Internet Service Digital Network b. Improved Speed Digital Network
    c. Integrated Services Digital Network d. Immediate Synchronous Digital Network
80. **DSL stands for:**
    a. Direct Service Lease b. Domain Server Link
    c. Distant Service Line d. Digital Subscriber Line
81. **Which of the following is NOT a network communications device?**
    a. Router b. Hub c. LAN d. NIC
82. **How many types of network standard are there:**
    a. 2 b. 4 c. 6 d. 8
83. **A device that connect multiple network using similar or different protocol:**
    a. Router b. Bridge c. Gateway d. None
84. **Typically, data transfer rate in LAN are of the order of:**
    a. Bits per second b. Kilobits per second c. Megabits per second d. None
85. **Ethernet uses:**
    a. Bus b. Ring c. Mesh d. None

Answers

1.	b	2.	c	3.	d	4.	a	5.	c
6.	d	7.	a	8.	a	9.	d	10.	c
11.	c	12.	a	13.	d	14.	d	15.	c
16.	d	17.	b	18.	c	19.	c	20.	a
21.	c	22.	d	23.	b	24.	c	25.	b
26.	a	27.	c	28.	d	29.	d	30.	a
31.	b	32.	c	33.	b	34.	c	35.	a
36.	d	37.	d	38.	b	39.	c	40.	a
41.	a	42.	a	43.	c	44.	d	45.	a
46.	b	47.	b	48.	a	49.	a	50.	d
51.	d	52.	c	53.	b	54.	a	55.	d
56.	a	57.	a	58.	a	59.	b	60.	d
61.	c	62.	b	63.	a	64.	a	65.	d
66.	d	67.	d	68.	b	69.	d	70.	b
71.	b	72.	b	73.	a	74.	b	75.	d
76.	c	77.	c	78.	b	79.	c	80.	d
81.	c	82.	a	83.	a	84.	c	85.	a

Fill in the Blanks

1. Collect ion of raw facts is called_____.
2. A receiver is also called_____.
3. Two forms of data transmission are _____ & _____.
4. TCP/IP stands for_____.

5. Data in _____ can travel in both direction but not at the same time.
6. _____ ensures the data are transmitted without any error.
7. Data transmission through medium can be either synchronous or _____.
8. WAN stands for_____.
9. A_____ is a microwave station placed in outer space.
10. A router is also used as an_____ device used for interconnecting different types of network together.
11. In_____ topology, all computers are interconnected through a central node called hub.
12. Two types of standards are _____ and_____.
13. _____ is the most commonly used protocol in LAN.
14. A _____ is a device to join similar types of network.

Answers

1. Data	2. Sink	3. Serial, parallel
4. Transmission control protocol/Internet Protocol		5. Half-duplex mode
6. Data Link layer	7. Asynchronous	8. Wide area Network
9. Satellite	10. Intermediate	11. Star
12. Defacto, Dejure	13. Ethernet	14. Bridge

True / False

1. Email is short for electronic mail.
2. Teleprocessing allows a user to make queries of a computer 1000 miles away.
3. An Ethernet system (IEEE 802.3 protocol) uses packet switching technique.
4. ISDN modems can communicate only with other ISDN modems.
5. The 16 bit and 32 bit are currently the two most popular bus widths.
6. FTP, short for File Transfer protocol is a tool that lets users transfer file across the internet.
7. DSL modem uses the cable TV network for data transmission.
8. A WAN is usually limited to one office building
9. A gateway connects two similar computers.
10. A bus network uses a central computer as the server.

Answers

1. T	2. F	3. F	4. F	5. F
6. T	7. F	8. F	9. F	10. F

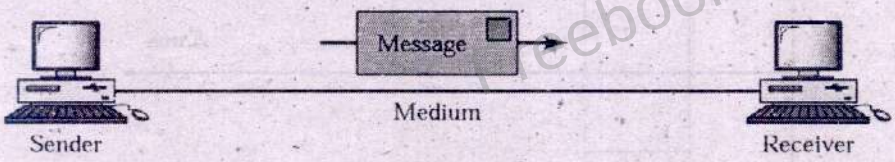
Chapter 3

Data Communications

Q. What is data communications? Explain the basic components of communication network?

Data communication is a process of transferring data electronically from one place to another. Data can be transferred by using different medium. The basic components of data communication are as follows:

- Message
- Receiver
- Encoder and Decoder
- Sender
- Medium / Communication Channel



1. Message

The **message** is the data or information to be communicated. It may consist of text, number, picture, sound, video or a combination of these.

2. Sender

Sender is the device that sends the message. It is also called **source** or **transmitter**. Normally, computer is used as sender in data communication systems.

3. Receiver

Receiver is the device that receives the message. It is also called **sink**. The receiver can be a computer, printer or any other computer related device. The receiver must be capable of accepting the message.

4. Medium

Medium is the path that connects the sender and the receiver. It is used to transmit data. The transmission medium can be a physical cable or a wireless medium. It is also called **communication channel**.

5. Encoder and Decoder

The **encoder** is a device that converts digital signals in a form that can pass through a transmission medium. The **decoder** is a device that converts the encoded signals into digital form. The receiver can understand the digital form of message. Sender and receiver cannot communicate successfully without encoder and decoder.

Q. What is signal? Discuss its different forms.

Signal is an electromagnetic or light wave that represents data. Signals are used to transfer data from one device to another through a communication medium.

Forms of Signals

Different forms of communication signals are as follows:

1. Digital Signals
2. Analog Signals

1. Digital Signals

Digital signal is a sequence of voltage represented in binary form. The digital signals are in the form of electrical pulses of **ON** and **OFF**. These signals are in discrete form. Digital signals are faster and efficient. They provide low error rates. They also provide high transmission speed and high-quality voice transmission.

All data communication between the computers is in digital form. Computers understand and work only in digital form. The following figure represents a high voltage as a 1 and a low voltage as a 0.

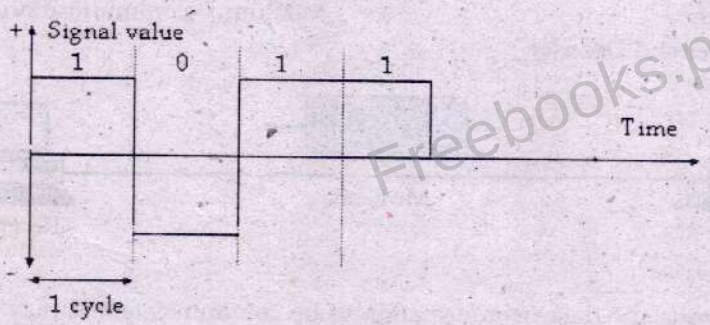


Figure: Digital Transmission

2. Analog Signals

Analog signal is a continuous electrical signal in the form of wave. The wave is known as **carrier wave**. Telephone line is most commonly used media for analog transmission of data. Light, sound, radio and microwave are also examples of analog signals.

Characteristics of Analog Signals

Two characteristics of an analog wave are as follows:

- **Frequency:** The number of times a wave repeats during a specific time interval is known as frequency.
- **Amplitude:** The height of wave within a given period of time is known as amplitude.

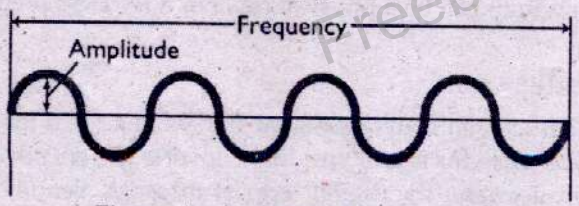


Figure: Analog Digital Transmission

Q. Explain different data types with examples?

Data can be represented in different ways. Different types of data are as follows:

1. Text

Text data consists of words, sentences and paragraphs. Text processing refers to the ability to manipulate words, lines and pages. Text is normally stored as **ASCII** code without formatting.

Examples

Some examples of text data are Usman Khalil, Pakistan, Islam etc.

2. Numeric Data

Numeric data consists of numeric digits from 0 to 9. It may also contain decimal point ".", plus sing "+" or negative sign "-". The numeric type of data may either be positive or negative. The use of "+" with positive numbers is optional.

Examples

10, +5, -12, 13.7, -32.5 etc.

3. Image

This type of data includes chart, graph, pictures and drawings. This form of data is more comprehensive. It can be transmitted as a set of bits. The bits are packed as bytes.

4. Audio

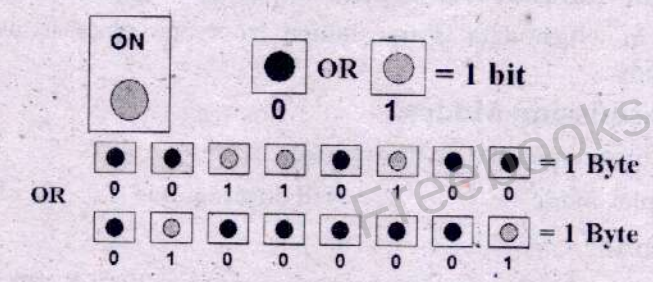
Sound is a representation of audio. Audio data includes music, speech or any type of sound.

5. Video

Video is a set of full-motion images played at a high speed. Video is used to display actions and movements.

Q. How is data represented in computer?

Computer works with binary numbers. Binary number may be 0 or 1. The data inside the computer is represented as electrical pulses. The binary digit 1 indicates the presence of electrical pulse. The binary digit 0 indicates the absence of electrical pulse.



The binary digit is known as bit. It is an abbreviation of **binary digit**. It is the smallest unit of memory. A collection of four bits is called **nibble**. A collection eight bits is called **byte**. One byte can store single character.

Q. What is meant by encoding of data? Explain different coding schemes to represent data in computer.

Computer works only with binary numbers. It stores all types of data in the form binary digits. The data is converted to binary form before it is stored inside the computer. The process of converting data into binary form is known as **encoding**. Data can be converted into binary form by using different coding schemes.

Types of Coding Schemes

Different types of coding schemes are as follows:

1. BCD Code

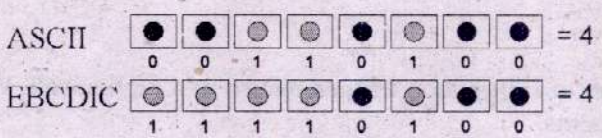
BCD stands for **Binary Coded Decimal**. It is a 4-bit code. It means that each decimal digit is represented by 4 binary digits. It was used by early computers.

2. EBCDIC Code

EBCDIC stands for **Extended Binary Coded Decimal Interchange Code**. It is an 8-bit code. It is normally used in mainframe computers. It can represent 256 characters.

3. ASCII

ASCII stands for **American Standard Code for Information Interchange**. It was published in 1968 by ANSI **(American National Standard Institute)**. It is the most widely used coding scheme for personal computers. The 7-bit code can represent 128 characters. It is not enough to represent some graphical characters displayed on computer screens. An 8-bit code can represent 256 characters. The extended 128 unique codes represent graphic symbols.



4. Unicode

Unicode is a 16-bit code. It can represent 65536 characters. It has started to replace ASCII code. It can represent the characters of all languages in the world.

Q. What is data transmission mode? Explain its types with example.

The way in which data is transmitted from one place to another is called **data transmission mode**.

Types of Transmission Modes

There are three types of data transmission modes:

1. Simplex mode
2. Half duplex mode
3. Full duplex mode

1. Simplex Mode

In **simplex mode**, data can flow only in one direction. It cannot be moved in both directions. It operates in a manner similar to a one-way street. The direction of flow never changes. A device with simplex mode can either send or receive data. It cannot perform both actions.

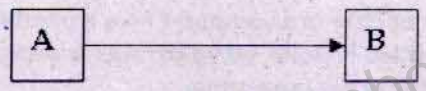


Figure: Simplex mode

Example

An example is a traditional television broadcast. The signal is sent from the transmitter to TV antenna. There is no return signal.

2. Half-Duplex Traffic

In **half-duplex mode**, data can flow in both directions but not at the same time. It is transmitted one-way at one time. A device with half-duplex mode can send or receive data but not at the same time. That is why the speed of half-duplex mode is slow.

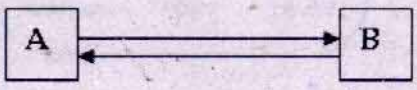


Figure: Half Duplex

Example

Internet surfing is an example of half-duplex communication. The user issues a request for a web page. The web page is downloaded and displayed before the user issues another request.

3. Full-Duplex Mode

In **full-duplex mode**, data can travel in both directions simultaneously. Full duplex mode is a faster way of data transmission as compared to half duplex. Time is not wasted in changing the direction of data flow.

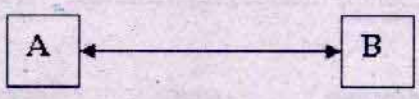


Figure: Full Duplex

Example

A telephone is a full-duplex device. Both persons can talk at the same time. Another example of full-duplex communication is automobile traffic on a two-lane road. The traffic can move in both directions at the same time.

Q. Discuss different types of data transmission.

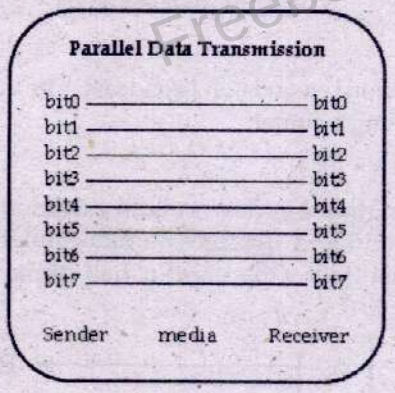
There are two types of data transmission. These are as follows:

1. Parallel Transmission
2. Serial Transmission

1. Parallel Transmission

A method of transmission in which groups of bits are sent at the same time over multiple wires is called **parallel transmission**. It is usually unidirectional. Each bit is transmitted over a separate line.

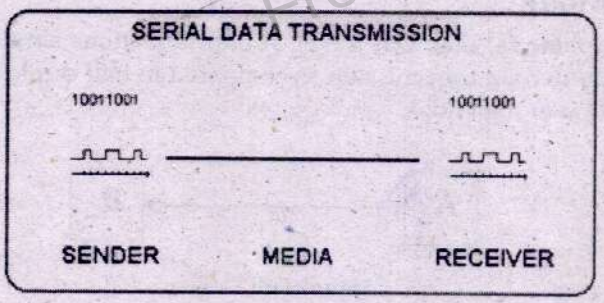
The internal transfer of data in a computer uses a parallel mode. The data transmission between computer and printer is done using parallel transmission. Parallel transmission is faster because all bits are sent at the same time.



2. Serial Transmission

A method of transmission in which data is sent one bit at a time is called **serial transmission**. The character bits are sent sequentially. Serial transmission is slower than parallel transmission as data is sent sequentially one bit at a time.

Telephone lines use this method of data transmission. Each individual bit of information travels along its own communication path.



Q. Explain asynchronous and synchronous transmission.

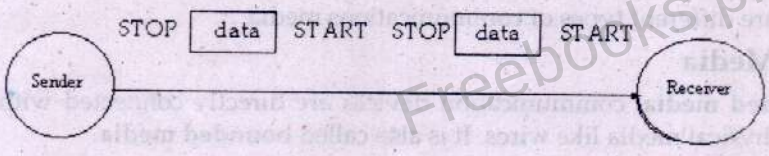
Two types of data transmission are as follows:

1. Asynchronous transmission
2. Synchronous transmission

1. Asynchronous Transmission

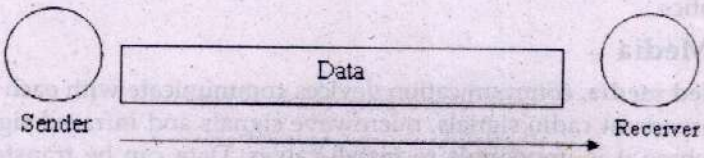
In **asynchronous transmission,** data is transmitted character by character. There are irregular gaps between characters in this transmission. It is cheaper to implement because data is not saved before it is sent. It uses a special start signal. The signal is transmitted at the beginning of each message. The start signal is sent when the character is about to be transmitted.

A start bit has a value of 0. It is called **space state**. The value of 0 indicates that a character is about to be transferred. It alerts the receiver and it gets ready to receive the character. If start bit has a value 1, it indicates that the line is idle. It is also called **mark state**.



2. Synchronous Transmission

In the **synchronous mode**, the saved data is transmitted block by block. Each block may consist of many characters. It uses a clock to control the timing of bits being sent. A large amount of information can be transmitted at a single time with this type of transmission.



Synchronous transmission is much faster than asynchronous because there is no gap between characters. This transmission is suited for remote communication between a computer and related devices like printers etc.

Q. What is bandwidth? Explain baseband and broadband.

Bandwidth

The amount of data that can be transferred through a communication medium in a unit of time is called **bandwidth**. The bandwidth of digital signal is measured in **bits per second** or **Bytes per second**. The bandwidth of analog signals is measured in **cycles/seconds** or **Hertz**.

Baseband

Baseband is a communications technique in which digital signals are placed on the transmission line without change in modulation. It means that digital signals are directly transmitted over transmission line. It transmits only one signal at a time. Digital signals are commonly called **baseband signals**.

Broadband

Broadband is a technique to transmit large amounts of data such as voice and video over long distance. It can send data by modulating each signal onto a different frequency. It transmits several streams of data at the same time using **FDM (Frequency Division Multiplexing)** technique. FDM divides the bandwidth of a communication line into smaller frequency bandwidths. Each part of the communication line can be used for transmitting data separately. Broadband is faster than Base band.

Q. What is communication media used in computer networks? What are different types of communication media?

Communication Media / Communication Channel

The path through which data is transmitted from one place to another is called **communication media** or **communication channel**.

There are different types of communications media.

1. Guided Media

In **guided media**, communication devices are directly connected with each other by using some physical media like wires. It is also called **bounded media**.

Examples

Some examples of bounded media for communication are as follows:

- Twisted Pair
- Coaxial Cable
- Fiber Optics

2. Unguided Media

In **unguided media**, communication devices communicate with each other through air or space using broadcast radio signals, microwave signals and infrared signals. Unbounded media is used where it is impossible to install cables. Data can be transferred all over the world using this media. It is also called **unbounded media.**

Examples

Some examples of unbounded media for communication are as follows:

- Microwave
- Communication Satellite
- Mobile Communication

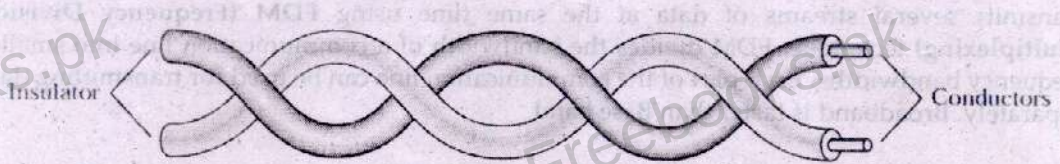
Q. Briefly describe different guided media.

Different guided media are as follows:

1. Twisted Pair

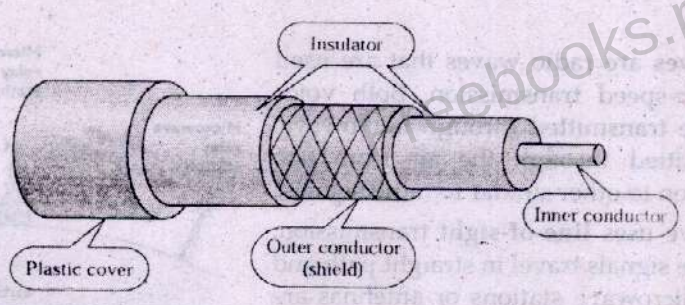
Twisted pair is one of the most commonly used communication media. Wire pair is usually made up of copper. The pair of wires is twisted together to reduce noise. **Noise** is an electrical disturbance that can degrade communication. It is normally used in local telephone communication.

It is used for short distance digital data communication. It is also called wire pair. Its speed is 9600 bits per second in a distance of 100 meter. Wire pairs are inexpensive. It has fewer bandwidths than coaxial cable or fiber optics.



2. Coaxial Cable

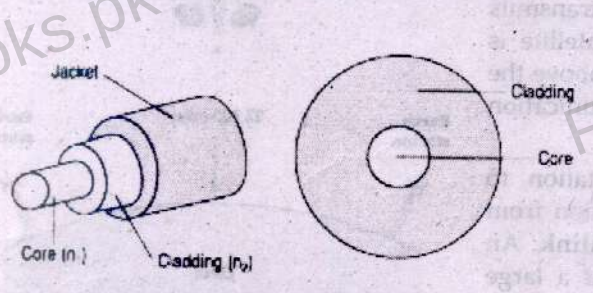
Coaxial cable consists of a copper wire core covered by insulating material. The insulated copper wire is covered by copper mesh. It protects the cable from electromagnetic waves. It is the same cable that is used for television. Coaxial cable contains 4 to 22 coaxial units called **tubes**.

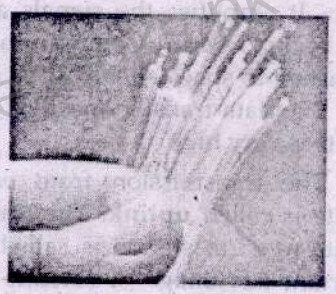


Coaxial cable is used for long-distance telephone lines and local area networks. It is more expensive than twisted pair.

3. Fiber Optics

A fiber optic cable transmits data as pulses of light through tiny tubes of glass. A typical fiber optic consists of very narrow strand of glass called **core**. The strands are thin like human hair. The core is the center of the fiber where light travels. There is a concentric layer of glass around the core called **cladding**. It reflects the light back into the core. The cladding has a protective coating of plastic called **jacket**.





An important characteristic of fiber optics is refraction. **Refraction** is the characteristic of a material to either pass or reflect light. Most telephone companies, ISPs and cable TV operators are using fiber optics in their networks.

Advantages of Fiber Optics

- Fiber optics networks work at a very high speed.
- The information carrying capacity of fiber optics is very high.
- Fiber optics is lighter and smaller in size.
- It is more secure and reliable form of data transmission.
- It is not affected by electromagnetic waves.

Disadvantages of Fiber Optics

- It is difficult to install.
- It is expensive.

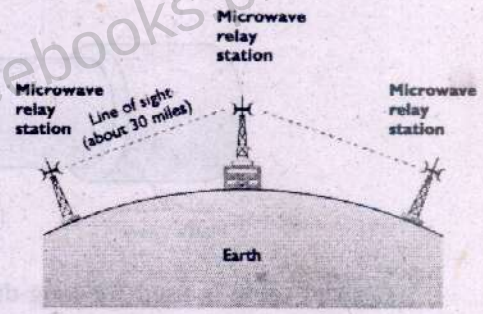
Q. Briefly describe unguided media.

Different unguided media used in communication are as follows:

- Microwave
- Communication Satellite
- Mobile Communication

1. Microwave

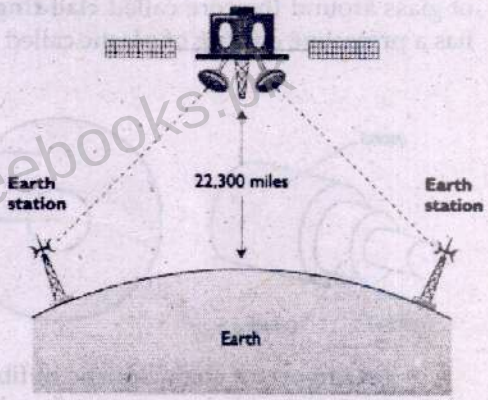
Microwaves are radio waves that are used to provide high-speed transmission. Both voice and data can be transmitted through microwave. Data is transmitted through the air from one microwave station to other similar to radio signals.



Microwave uses **line-of-sight** transmission. It means that the signals travel in straight path and cannot bend. Microwave stations or antennas are usually installed on high towers or buildings. Microwave stations are placed within 20 to 30 miles to each other. Each station receives signal from previous station and transfer to next station. In this way, data transferred from one place to another. There should be no buildings or mountains between microwave stations.

2. Communication Satellite

Communication satellite is a space station. It receives microwave signals from earth station. It amplifies the signals and retransmits them back to earth. Communication satellite is established in space about 22,300 miles above the earth. The data transfer speed of communication satellite is very high.



The transmission from earth station to satellite is called **uplink**. The transmission from satellite to earth station is called **downlink**. An important advantage of satellite is that a large volume of data can be communicated at once. The disadvantage is that bad weather can severely affect the quality of satellite transmission.

3. Mobile Communication

Mobile communication is radio-based network. It transmits data to and from mobile computer. Computers can connect to the network via wired ports or wireless connections.

Q. Write a short note on modem. Describe its features.

Modem stands for **modulation** and **demodulation**. Modem is a device that converts digital signal into analog and analog signal into digital. Modem sends and receives data from one computer to another through telephone lines. The sending and receiving computers both must have modems.

The process of converting digital signal into analog signal is called **modulation**. Computer stores data in digital form. Since a modem transmits data using telephone line, so it is converted from digital to analog form.

The process of converting analog signal into digital signal is called **demodulation**. The modem on receiving computer receives data in analog form. The incoming analog data is converted back into digital format to be used by computer.

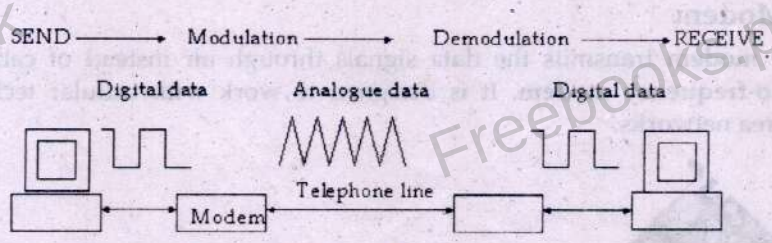


Figure: Data transmission by Modem

Features of Modem

Some important features of modem are as follows:

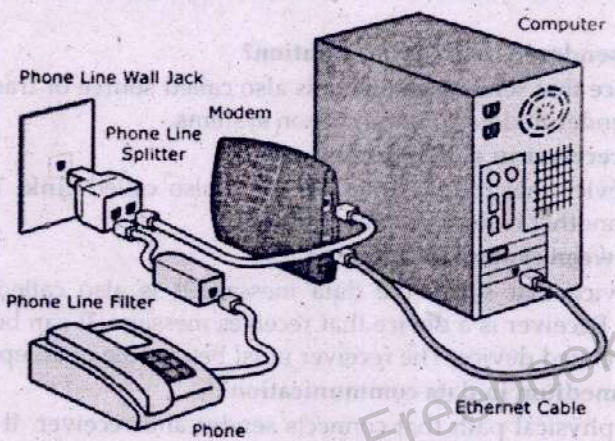
- **Speed:** Speed is the rate at which the modem can send data in bps. Typically modem speeds are 300 bps to 56k bps.
- **Self-Testing:** Modem can test the digital connection with computer. It can also test analog connection with remote modem.
- **Voice over Data:** Modem provides the facility of voice conversation while data is being transmitted. Both the source and destination modems should have this feature.
- **Error Control:** Modems use different methods to control errors for transmitted data.

Q. What are different types of modems?

Different types of modems in terms of physical size and shape are as follows:

1. External Modem

External modem is attached to the system unit as an external device through telephone line. It is connected to the telephone wall jack by another cable. External modem is connected to computer using serial cable to **COM1** or **COM2** port. It requires external power supply. It is easy to setup. External modem is expensive.



2. Internal Modem

Internal modem is a circuit board that is inserted into an expansion slot on the motherboard. Internal modem cannot be moved from one computer to another easily. It is difficult to setup than other types of modem. It is less expensive than external modem.

3. Wireless Modem

Wireless modem transmits the data signals through air instead of cable. It is also known as **radio-frequency modem**. It is designed to work with cellular technology and wireless local area networks.

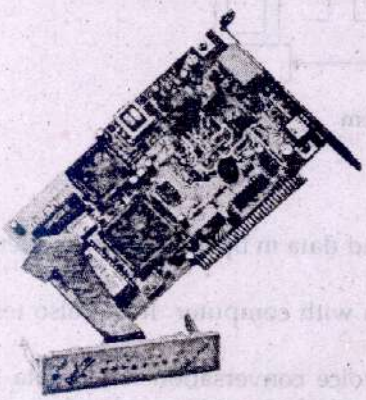


Figure: Wireless Modem

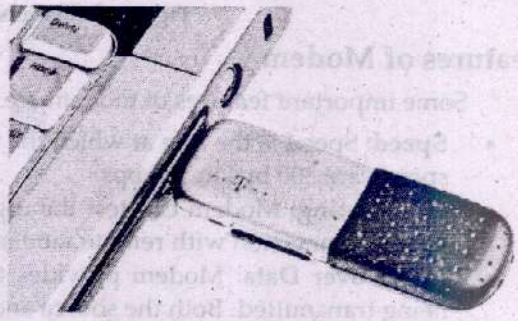


Figure: Wireless Modem

Short Questions

Q.1. Define data communication.

Data communication is a process of transferring data electronically from one place to another. Data can be transferred by using different medium.

Q.2. List out different elements of data communication.

The basic elements of data communication are message, sender, receiver,medium and Encoder and Decoder.

Q.3. Define the term sender in data communication?

Sender is a device that sends message. It is also called source or transmitter. Normally, computer is used as sender in data communication systems.

Q.4. Define the term receiver in data communication?

Receiver is a device that receives message. It is also called **sink**. The receiver can be computer, printer, or another computer related device.

Q.5. Differentiate between sender and receiver.

Sender is a device that sends the data message.It is also called source. Sender is normally a computer. Receiver is a device that receives message. It can be computer, printer, or another computer related device. The receiver must be capable of accepting the message.

Q.6. Define the term medium in data communication?

Medium is the physical path that connects sender and receiver. It is used to transmit data. The medium can be a copper wire, a fiber optic cable, microwaves etc.

Q.7. Define the term Encoder and Decoder.

Encoder is a device that converts digital signals in a form that can pass through a transmission medium. Encoder is a device that converts the encoded signals into digital form. Sender and receiver cannot communicate successfully without encoder and decoder.

Q.8. What is Signal?

Signal is an electromagnetic or light wave that represents data. Signals are used to transfer data from one device to another through a communication medium

Q.9. Define digital signal.

Digital signal is a sequence of voltage represented in binary form. Digital signals are in the form of electrical pulses of ON and OFF. These signals are in discrete form. Digital signals are faster and efficient. All data communication between computers are in digital form.

Q.10. Define analog signal.

Analog signal is a continuous electrical signal in the form of wave. The wave is known as **carrier wave**. Sound wave is an example of analog signal. Analog signal is measured in volts and its frequency is in **Hertz (Hz)**.

Q.11. Write are two characteristics of analog signal.

Two characteristics of an analog wave are frequency and amplitude. The number of times a wave repeats during a specific time interval is known as frequency. The height of wave within a given period of time is known as amplitude.

Q.12. Differentiate between analog and digital signal. Which is popular?

Analog signal is a continuous electrical signal in the form of wave. Sound wave is an example of analog signal. Digital signal is a sequence of voltage represented in binary form. Digital signals are popular. They provide lower error rates, higher transmission speed and higher quality voice transmission.

Q.13. How is data represented in computer?

Computer works with binary numbers. Binary number may be 0 or 1. The data inside the computer is represented as electrical pulses. The binary digit 1 indicates the presence of electrical pulse. The binary digit 0 indicates the absence of electrical pulse.

Q.14. Define bit and byte.

A binary digit is called bit. It takes one storage location in memory. A collection of eight bits is called byte. It is used to store single character.

Q.15. Write different encoding characters used to represent data in computer.

The process of converting data into binary form is known as encoding. Data can be converted into binary form by using different encoding techniques. These are BCD Code, EBCDIC Code, ASCII and Unicode.

Q.16. What is ASCII code?

ASCII is the most widely used coding scheme for personal computers. The 7-bit code can represent 128 characters. It is not enough to represent some graphical characters displayed on computer screens. An 8-bit code can represent 256 characters. The extended 128 unique codes represent graphic symbols.

Q.17. Why does ASCII code only provide 256 character combinations?

It is an 8-bit code, and $28 = 256$.

Q.18. What is Unicode?

Unicode is a 16-bit code. It can represent 65536 characters. It has started to replace ASCII code. It can represent the characters of all languages in the world.

Q.19. Explain why Unicode is superior to ASCII code.

ASCII code uses 8 bit. It is limited to 256 different characters. Unicode uses 16 bits. It allows over 65,000 codes. It can represent all major languages.

Q.20. Define transmission modes.

The way in which data is transmitted from one place to another is called data transmission modes. Simplex, half duplex and full duplex are modes of data transmission.

Q.21. Describe simplex mode of data transmission.

In simplex mode, data can flow only in one direction. It operates in a manner similar to a one-way street. The direction of flow never changes. A device with simplex mode can either send or receive data. Traditional television broadcast is an example of simples mode.

Q.22. Describe half duplex mode of data transmission.

In half-duplex mode, data can flow in both directions but not at the same time. It is transmitted one-way at one time. A device with half-duplex mode can send or receive data but not at the same time. So, the speed of half-duplex mode is slow. Internet surfing is an example of half duplex transmission.

Q.23. Compare simplex and half duplex mode.

In simplex mode, data can flow only in one direction. Radio and television broadcasting are the examples of this mode. In half-duplex mode, data can flow in both directions but not at the same time.

Q.24. What is full duplex data transmission mode?

In full-duplex mode, data can travel in both directions simultaneously. Full duplex mode is faster way of data transmission than half duplex. Time is not wasted in changing the direction of data flow. Telephone conversation is an example of full duplex mode.

Q.25. What do you know about parallel data transmission?

A method of transmission in which groups of bits are sent at same time over multiple wires is called parallel transmission. It is usually unidirectional. Each bit is transmitted over a separate line. Data transmission between computer and printer is a parallel transmission.

Q.26. What is serial data transmission?

A method of transmission in which data is sent one bit at a time is called serial transmission. Telephone lines use this method of data transmission. Each individual bit of information travels along its own communication path.

Q.27. Differentiate between serial and parallel transmission.

Parallel transmission is faster because all bits are sent at the same time. Serial transmission is slower than parallel transmission because data is sent sequentially one bit at a time. Each individual bit of information travels along its own communication path.

Q.28. Describe Asynchronous data transmission.

In **asynchronous transmission**, data is transmitted character by character. There are irregular gaps between characters. It uses flow control instead of clock to synchronize data between source and destination. It is cheaper because data is not saved before it is sent.

Q.29. Describe Synchronous data transmission.

In synchronous mode, saved data is transmitted block by block. Each block may consist of many characters. It uses a clock to control the timing of bits being sent. Synchronous transmission is much faster than asynchronous because there is no gap between characters.

Q.30. How does asynchronous transmission take place?

In asynchronous transmission, data is transmitted character by character. It uses a special start signal. A start bit has a value of 0. The value of 0 indicates that a character is about to be transferred. It alerts the receiver and it gets ready to receive the character. If start bit has a value 1, it indicates that the line is idle.

Q.31. Compare asynchronous and synchronous transmission.

In asynchronous transmission, data is transmitted one character at a time. The sender and receiver are not synchronized with each other. Synchronous transmission sends a block of characters at a time. It allows sender and receiver to be synchronized with each other. Synchronous transmission is typically more efficient than asynchronous communications.

Q.32. Differentiate between bounded & unbounded communication.

In bounded media, communication devices are directly connected via physical media like wires. Coaxial cable and fiber optics are examples of bounded media. In unbounded media, communication devices communicate through air or space using broadcast radio signals etc. Microwave and satellite are examples of unbounded media.

Q.33. Name some bounded media.

Some examples of bounded media are wire pairs, coaxial cable and fiber optics.

Q.34. Name some unbounded communication media.

Some examples of unbounded communication media are microwave system and communication satellite.

Q.35. What is wire pair?

Wire pair is a communication media made up of copper. Wire pair is usually made up of copper. The pair of wires is twisted together It is used for short distance digital data communication. Its speed is 9600 bits per second in a distance of 100 meter.

Q.36. What is coaxial cable?

Coaxial cable consists of a copper wire core covered by insulating material. The insulated copper wire is covered by copper mesh. It protects the cable from electromagnetic waves. It is used for long-distance telephone lines and local area networks.

Q.37. What is fiber optics?

Fiber optics uses binary method of data transfer. It is made up of a thin glass fiber. It is thinner than hair. Data transfer rate of fiber optics is very fast. There is no chance of data loss.

Q.38. Write two advantages and two disadvantages of fiber optics cable.

The advantages are that it provides faster data transmission and better security for signal during transmission. The disadvantages are that it is difficult to install and very costly.

Q.39. Define refraction.

An important characteristic of fiber optics is refraction. **Refraction** is a characteristic of a material to pass or reflect light

Q.40. Describe the roles of core and cladding in optical fiber.

The core carries the light signal. Cladding reflects the signal back into the core with perfect internal reflection so that no light escapes from the core.

Q.41. Write a short note on microwave transmission.

Microwaves are radio waves that are used to provide high-speed transmission. Data is transmitted through the air from one microwave station to another similar to radio signals. Microwave uses line-of-sight transmission.

Q.42. How does microwave system work?

Microwave uses line-of-sight transmission. It means that the signals travel in straight path and cannot bend. Microwave stations are placed within 20 to 30 miles to each other. Each station receives signal from previous station and transfer to the next station.

Q.43. What is the disadvantage of Microwave System?

A disadvantage of microwave is that it is limited to line-of-sight transmission. This means that Microwave signals must be transmitted in a straight line. There can be no obstruction such as buildings or mountains, between microwave stations.

Q.44. What is Communication Satellite?

Communication satellite is a space station. It receives microwave signals from earth station. It amplifies the signals and retransmits them back to earth. It is established in space about 22,300 miles above the earth.

Q.45. Write one advantage and one disadvantage of communication via satellite.

The advantage is that a satellite can allow long distance wireless communications. The disadvantage is the high cost to put a communications satellite in orbit.

Q.46. Which units are used to measure the transmission rate of modems?

The unit of measure is bits per second (bps).

Q.47. Define modulation. Why is it necessary?

The process of converting digital signal into analog signal is called modulation. Computer stores data in digital form. Since a modem transmits data using telephone line, so it is converted from digital to analog form.

Q.48. Define demodulation. Why is it necessary?

The process of converting analog signal into digital signal is called demodulation. The modem on receiving computer receives data in analog form. The incoming analog data is converted back into digital format to be used by the computer.

Q.49. How does a modem allow computers to communicate over telephone lines?

Modem translates computer data into signals compatible with the telephone system.

Q.50. Define baseband.

Baseband is a communications technique in which digital signals are placed on the transmission line without change in modulation. It transmits up to a couple of miles. It does not require complex modems. Digital signals are commonly called baseband signals.

Q.51. Define broadband.

Broadband is a technique to transmit large amounts of data over long distance. It can send data by modulating each signal onto a different frequency. It transmits several streams of data simultaneously using **FDM (Frequency Division Multiplexing)** technique.

Q.52. Compare broadband and baseband transmission.

In broadband transmission, data is carried on high-frequency carrier waves. Several channels may be transmitted over a single cable. It allows one medium to be used for a variety of transmission needs. Baseband transmission does not use a carrier wave. It sends data along channel by voltage fluctuations. It cannot transmit multiple channels on one cable but it is less expensive than broadband as it can use less expensive cable and connectors.

Q.53. Describe FDM.

FDM stands for **Frequency Division Multiplexing.** It divides the bandwidth of a communication line into smaller frequency bandwidths. Each part of the communication line can be used for transmitting data separately.

Q.54. Explain external modem.

External modem is attached to the system unit as an external device through telephone line. This modem is connected to computer using serial cable to COM1 or COM2 port. It requires external power supply. It is easy to setup.

Q.55. Explain internal modem.

Internal modem is a circuit board that is inserted into an expansion slot on the motherboard. It cannot be moved from one computer to another easily. It is difficult to setup than other types of modem.

Q.56. What do you know about wireless modem?

Wireless modem transmits the data signals through air instead of cable. It is also known as **radio-frequency modem**. It is designed to work with cellular technology and wireless local area networks.

Q.57. What is start signal? Write its different states.

Asynchronous transmission uses a special **start signal**. It is transmitted at the start of each message. It is sent when the character is about to be transmitted. A start bit has a value of 0. It is called **space state**. If the start bit has the value 1, it indicates that the line is idle.

Q.58. What is meant by encoding of data?

Computer works only with binary numbers. It stores all types of data in the form binary digits. The data is converted to binary form before it is stored inside the computer. The process of converting data into binary form is known as **encoding**. Data can be converted into binary form by using different coding schemes.

Multiple Choice

1. **The process of transferring data electronically from one place to another is called:**
   a. Data processing b. Data Communication c. Data sequencing d. Data Sender
2. **All of the following are elements of data communication system EXCEPT.**
   a. Sender b. Receiver c. Medium d. Voltage
3. **What is required to send data, instructions or information?**
   a. Sending device b. Receiving device c. Both a & b c. None
4. **Physical path that connects the source and receiver is known as:**
   a. Communication Channel b. Decoder c. Encoder d. Self-testing
5. **The electromagnetic or light waves representing data are called:**
   a. Information b. Signal c. Sender d. None
6. **The number of times a wave repeats during a specific time interval is called:**
   a. Pulse b. Amplitude c. Frequency d Oscillation
7. **The height of wave within a given period of time is known as:**
   a. Frequency b. Amplitude c. Oscillation d. Pulse
8. **The chart, graph, pictures and freehand drawing are examples of:**
   a. Image data b. Audio data c. Numeric data d. Text data
9. **The music and speech represent:**
   a. Image b. Text c. Numeric d. Audio
10. **Which of the following type of data is used to display actions and movement?**
    a. Audio b. Video c. Image d. Text
11. **Which type of data consists of words, sentences and paragraphs?**
    a. Text b. Audio c. Numeric d. Video
12. **Which of the following coding scheme uses 4-bit code?**
    a. ASCII b. EBCDIC c. BCD d. Unicode

13. **Which of the following coding scheme used by IBM?**
a. ASCII b. EBCDIC c. BCD d. Unicode
14. **How many characters ASCII 7-bit code can represent?**
a. 128 b. 256 c. 500 d.364
15. **How many characters in ASCII 8-bit code can represent?**
a. 128 characters b. 256 characters c. 500 characters d.364 characters
16. **Unicode is a :**
a. 16-bit code b. 32-bit code c. 64-bit code d.132-bit code
17. **How many characters can Unicode represent?**
a. 65536 characters b. 10000 characters c. 15000 characters d. None
18. **Communication mode is:**
a. LAN b. Internet c. Full-duplex d. All of these
19. **Transmission permitting data to move only one way at a time is called:**
a. Half-duplex b. Simplex c. Full-duplex d. Start/stop
20. **An arrangement in which data can be received and sent simultaneously is called:**
a. Simples b. Full-duplex c. Half-duplex d. Multi-duplex
21. **A telephone conversation is an example of:**
a. Full-duplex transmission b. Half-duplex transmission.
c. Simplex transmission. d. Asynchronous transmission.
22. **Television and radio broadcasts are examples of:**
a. Full-duplex transmission b. Half-duplex transmission
c. Simplex transmission d. None
23. **Internet surfing is an example of:**
a. Simplex b. Half duplex c. Full duplex d. None
24. **Which transmission allows data to travel in both directions but only one direction at a time?**
a. Simplex b. Half Duplex c. Full Duplex d. Reverse Duplex
25. **Full-duplex communication is made possible by devices called:**
a. Multiplexer b. Modem c. Keyboard d. Mouse
26. **Which of the following is the fastest communication mode?**
a. Half duplex b. Full duplex c. Simple d. None
27. **The internal transfer of data in a computer uses:**
a. Parallel mode b. Serial mode c. Both and b d. None
28. **Which of the following devices uses parallel transmission?**
a. Printer b. Keyboard c. Mouse d. None
29. **Most data transmitted over telephone lines uses:**
a. Serial transmission b. Parallel transmission c. Both a and b d. None
30. **Which of the following is comprised of individual electrical pulses that represent the bits grouped together into bytes?**
a. Communications device b. Digital signal c. Analog signal d. Sending device
31. **Analog signal is measured in:**
a. Volt b. Hertz c. Digits d. WATTS
32. **Sound, light and radio waves are examples of:**
a. Digital signal b. Analog signal c. Simple signals d. None

33. **Data is transmitted block by block in:**
a. Synchronous transmission b. Digital transmission
c. Asynchronous transmission d. Analog transmission

34. **Which transmission type transmits data one character at a time, with the sender and receiver not synchronized with each other?**
a. Synchronous b. Ethernet c. Asynchronous d. None

35. **This type of transmission is sometimes called start/stop transmission.**
a. Asynchronous b. Intermittent c. Synchronous d. Pulse

36. **Start/stop bits are not required in this type of transmission.**
a. Asynchronous b. Pulse c. Intermittent d. Synchronous

37. **Which data transmission type uses a clock to control the timing of bits being sent?**
a. Synchronous b. Asynchronous c. Parallel d. None

38. **Which of the following technique uses modulation?**
a. Bandwidth b. Broadband c. Baseband d. None

39. **A communication technique to transmit large volume of data over long distance is:**
a. Baseband b. Broadband c. Bandwidth d. None

40. **The communication channels can be divided into:**
a. Two types b. Four types c. Seven types d. None

41. **Which of the following transmission media is used in LAN?**
a. Satellite b. Microwave c. Coaxial cable d. None

42. **An important property of fiber optic cable is:**
a. Noise b. Reflection c. Interference d. Attenuation

43. **The diameter of fiber optical cable is:**
a. 62.5 cm b. 62.5 microns c. 62.5 m d. 62.5 mm

44. **Which of the following can severally affect the quality of satellite transmission?**
a. Bad weather b. Mountains c. Light rays d. Moon

45. **The time taken by a data signal to reach to moon and then back to earth was about:**
a. 2 minutes b. 2-second c. 2 ms d. 2 hours

46. **Microwave transmission, coaxial cables and fiber optics are examples of:**
a. Modems b. Routers c. Transmission Media d. Ring networks

47. **Which of the following consists of thin glass to transmit beams of light?**
a. Twisted pair b. Coaxial cable c. Fiber-optic cable d. None

48. **Which of the following transmits voice and data through air as high-frequency radio waves?**
a. Twisted pair b. Coaxial cable c. Fiber-optic cable d. Microwave

49. **All of the following are guided communications media EXCEPT:**
a. Twisted pair b. Fiber-optic cables c. Coaxial cables d. Satellite

50. **Select unguided media:**
a. Twisted pair b. Co-axial c. Satellite d. Fiber optic

51. **Which of the following is not a communication media?**
a. Twisted Pair b. UTP c. Microwave d. Modem

52. **Which of the following is comprised of two separate insulated copper wires that are twisted together?**
a. Fiber optics b. Twisted-pair wire c. Submarine d. Coaxial cables

53. **Which communications medium requires line-of-sight?**
a. Microwave b. Fiber optic c. Twisted pair d. Coaxial

54. **Modem stands for:**
a. Modification/demodification b. Modulation/demodulation
c. Mode/Modeless d. None

55. **Which is the correct measurement of a modem's data transfer rate?**
a. Kbps b. Gbps c. bps d. Mbps

56. **A communications signal in the form of a continuous wave is called:**
a. Digital. b. Modulation. c. Analog d. None

57. **The process of converting from analog to digital signal is known as:**
a. Modulation b. Data routing c. Data sequencing d. Demodulation

58. **Which kind of signal is mostly required by telephone lines?**
a. Digital b. Analog c. Both d. None

59. **Converting a digital signal to an analog signal is called:**
a. Modulation b. Demodulation c. Conversion d. None

60. **Signals produced by a computer to send over phone line must be converted to:**
a. Modems b. Analog signals c. Digital signals d. Microwaves

61. **Modulation needs to be done:**
a. Prior to sending a digital signal over the telephone line
b. Prior to receiving a signal from the telephone line.
c. Whenever a signal's frequency needs to be increased.
d. Whenever a signal's amplitude needs to be manipulated.

62. **A modem's rating of 56K refers to its:**
a. Memory size b. Transmission speed c. Modem Size d. None.

63. **Which is an advantage of synchronous over asynchronous transmission?**
a. Simplicity b. Speed c. No error checking d. Two-way communications

64. **A modem:**
a. Derives its name from modulator-demodulator
b. Converts digital signals into analog signals
c. Converts analog signals into digital signals
d. All of the above

65. **Which of the following features is provided with a modem?**
a. Speeds b. Self-testing c. Transmission rate d. All of these

66. **Bps is short for:**
a. Baud per second b. bytes per second c. Bits per second d. binary packets a second

67. **A modem allows computers to access other computers through all of the following types of connections EXCEPT:**
a. Wireless b. Telephone lines c. Offline d. Cable

68. **Which modem is used to transmit data signals through air instead of cable?**
a. Internal modem b. Wireless modem c External modem d. None

69. **Which type of modem can be added to the system unit through expansion slot?**
a. External modem b. Internal modem c. Wireless modem d. None

70. **Which of the following is not a common communication code?**
a. Unicode b. EBCDIC c. bilateral code d. ASCII

71. **Communication between a computer and keyboard involves:**
a. simplex b. Half-duplex c. Full-duplex d. All

72. **BCD stands for:**
a. Binary coded decimal b. Base coded decimal
c. Byte coded decimal d. Bidirectional coded decimal

73. **IBM stands for:**
a. International Business machine b. Internet Business Machine
c. Internet Bulletin Machine d. International Binary Machine

74. **BCD Code is a _____ bit code.**
a. 4 b. 8 c. 15 d. 32

75. **_____ code is 7-bit or 8-bit code.**
a. BCD b. EBCDIC c. ASCII d. None

76. **EBCDIC is a _____ bit code.**
a. 4-bit b. 6-bit c. 7-bit d. 8-bit

77. **EBCDIC stands for:**
a. Extended Binary Coded Decimal Interchange Code
b. Extended Bit Code Decimal Interchange Code
c. Extended Bit Case Decimal Interchange Code
d. Extended Binary Case Decimal Interchange Code

78. **ASCII stands for:**
a. American Stable Code for International Interchange
b. American Standard Case for Institutional Interchange
c. American Standard Code for Information Interchange
d. American Standard Code for Interchange Information

79. **Example of non numerical data is:**
a. Employee address b. Examination score
c. Bank balance d. Student Roll No

80. **The term baud is measured of:**
a. Speed at which data travels over communication line b. Memory capacity
c. Instruction execution time d. All

81. **A large number of computer in wide geographical area can be efficiently connected by:**
a. Twisted pair b. Coaxial cable c. Communication Satellite d. None

Answers

1. b	2. d	3. a	4. a	5. b	6. c
7. b	8. a	9. d	10. b	11. a	12. c
13. b	14. a	15. b	16. a	17. a	18. c
19. a	20. b	21. a	22. c	23. b	24. b
25. a	26. b	27. a	28. a	29. a	30. b
31. a	32. b	33. a	34. c	35. a	36. d
37. a	38. b	39. b	40. a	41. c	42. b
43. b	44. a	45. b	46. c	47. c	48. d
49. d	50. c	51. d	52. b	53. a	54. b
55. c	56. c	57. d	58. b	59. a	60. b

61. a	62. b	63. b	64. d	65. d	66. b
67. c	68. b	69. b	70. c	71. a	72. a
73. a	74. a	75. c	76. d	77. a	78. c
79. a	80. a	81. c			

Fill in the Blanks

1. In_____ transmission, a stat bit and a stop bit frame a character byte.
2. Data communication signals can be in _____ or _____ form.
3. Modem is an electronic device that converts digital signal into analog signals, which is called_____.
4. The_____ transmission involves the concurrent flow of bits of data through separate communication lines.
5. ASCII is _____ bits code.
6. A television broadcast is an example of _____ transmission.
7. In _____ transmission data is transmitted by character by character.
8. The data is transmitted in both directions simultaneously on same channel_____.
9. Fiber optic is better for very high speed, high-capacity data transmission than _____ cable because of lack of attenuation and purity of the signal.
10. The number of frequencies that can fit on a link at one time is called_____.
11. _____ is a process of transferring data electronically from place to another place.
12. A _____ that creates the message to be transmitted.
13. Source is also called _____.
14. Message is transmitted from one place to another through_____.

Answers

1. asynchronous	2. digital , analog	3. modulation
4. parallel	5. 7 (seven)	6. simplex
7. asynchronous	8. full duplex	9. coaxial
10. bandwidth	11. Data Communication	12. Sender
13. Sender	14. Medium	

True / False

1. An internal modem is a circuit board that can be addede to system unit of computer.
2. In full transmission, the channel capacity is shared by both communication devices at all time.
3. Normally, modern transmission is asychronous.
4. Transmission of signals across communication medicum is called signaling.
5. The voice channel has a bandwidth of 0-233 KHz.
6. Sychronous tranmission is much faster than asychronous.

Answers

1. T	2. T	3. T	4. F	5. F	6. T

Chapter 4

Applications and Uses of Computers

Q. Discuss the impacts of computer technology on the society.

Computer has made a very vital impact on our society. It has changed the way of life. The use of computer technology has affected every field of life. People are using computers for performing different tasks quickly and easily. The use of computers makes different tasks easier. It also saves a lot of time and effort. It also reduces overall cost to complete a particular task.

Many organizations are using computer for keeping the records of their customers. Banks are using computers for maintaining accounts and managing financial transactions. The banks are also providing the facility of online banking. The customers can check their account balance from home using Internet. They can also make financial transaction online. The transactions are handled easily and quickly with computerized systems.

People are using computers for paying their bills. They are getting information from the Internet. They are also using computers to manage their home budget etc.

Computer can be used in education field to improve teaching and learning process. Computer is used in colleges to provide the methods of teaching in different ways. It is used to educate the students effectively. Many computer-based educational programs are available. The students can learn to read and speak a foreign language. Many educational games are becoming popular in the students.

Moreover, the computer is being used in every field of life such as medical, business, industry, airline and weather forecasting etc.

Q. Explain how computers can be useful in business.

The use of computer technology in business provides many facilities. Businessmen are using computers to interact with their customers anywhere in the world. Many business tasks are performed more quickly and efficiently. Computers also help them to reduce the overall cost of their business. Computer can be used in business as follows:

1. Marketing

A business organization can use computers for marketing their products. Marketing applications provide information about the products to customers. Computer is also used to manage the distribution system, advertising and selling activities. It can also be used in deciding pricing strategies.

2. Stock Exchange

Stock exchange is the most important place of businessmen. Many stock exchanges use computers to conduct bids. The stockbrokers perform all trading activities electronically.

They connect with computer where brokers match the buyers with sellers. It reduces cost as no paper or special building is required to conduct these activities.

3. Banks

The use of computers in banks has provided many benefits. It saves time and provides convenience for customer. Many banks provide the facility of **Automated Teller Machine**. **ATM** is used to withdraw cash from machine. Banks provide credit cards that can be used to purchase different items using the Internet. Banks use computers to maintain customer accounts. The transactions are handled easily and quickly with computerized system.

4. Departmental Store

The use of computers in departmental stores has made the business activities fast and accurate. The cashier can enter sales data in computer by using **barcode reader**. The barcode contains the price of the item. The computer uses this input to calculate bill. The record of sale is stored in computer. This record can be used to analyze accounts and stock inventory.

5. Office Automation

Office automation is the process of automating office tasks using computers. Many types of tasks are performed in an office like decision-making, data manipulation, document handling and communication etc. Many computer technologies are used to perform these activities easily.

Q. How can computer be useful in office automation?

Office automation is the process of automating office tasks using computers. Many types of tasks are performed in an office. These tasks include:

- Decision-making
- Data manipulation
- Document handling
- Communication and storage

Many computer technologies are used to perform these activities in an office easily. Some computerized systems used in an office are as follows:

1. Document Management System (DMS)

DMS consists of different applications like word processing, desktop publishing, reprographic, image processing and archival storage applications.

- **Word processing** is used to create documents electronically. It is used to produce high-quality letters, proposals, reports and brochures etc.
- **Desktop publishing** is used to make these documents attractive with photos and graphics etc. It is used to publish the documents.
- **Spreadsheet application** is used to maintain records and calculate expenses, profits and losses. It is also used to perform mathematical, statistical and logical processing.
- **Reprographics** is a process of reproducing multiple copies of a document.
- **Image processing** is used to scan and store an image in computer. It can also modify and improve the quality of images.

2. Message Handling System

It is used to send messages or documents from one location to another. Many techniques are used for this purpose such as facsimile (fax), email and voice mail etc.

3. Office Support System

It is used to coordinate and manage the activities of a workgroup. The members of a workgroup can share their work and coordinate with one another. Groupware and desktop organizers are examples of this system.

Q. Explain how computer can be useful in medical field.

Computer can be used in medical field in the following ways:

1. Hospital Administration

Hospital is an important organization. We can use computer for the administration of a hospital. We can computerize the accounting, payroll and stock system of the hospital. We can keep the record of different medicines, their distribution and use in different wards etc.

2. Recording Medical History

Computer can be used to store medical history of patients. We can store important facts about patients in computer. We can keep record of his past treatment, suggested medicines and their results. Such systems can be very effective and helpful for doctors.

3. Monitoring Systems

Some serious patients must be monitored continuously. Monitoring is needed especially in operation theatres and intensive care units. Many computerized devices are used to monitor the blood pressure, heartbeat and brain of the patients.

4. Life Support Systems

Life support systems are used to help the disabled persons. Many devices are used that help deaf person to hear. Scientists are trying to create a device to help blind person to see.

5. Diagnosis of Diseases

Different software are available to store data about different diseases and their symptoms. Diagnosis of disease is possible by entering the symptoms of a patient. Different computerized devices are used in laboratories for different tests of blood.

Q. Describe the uses of computer at home.

Computer can be used at home in the following ways:

1. Home Budget

Computer can be used to manage the home budget. The user can easily calculate expenses and income. He can list all expenses in one column and income in another column. He can apply any calculation on these columns to plan home budget.

2. Computer Games

An important use of computer at home is playing games. Different types of games are available. These games are a source of entertainment and recreation. Many games are available that are specially developed to improve your mental capability and thinking power.

3. Working from Home

People can manage office work at home. The owner of a company can check the work of employees from home. He can control his office while sitting at home.

4. Entertainment

People can find entertainment on the Internet using computer. They can watch movies, hear songs and download different stuff. They can also watch live matches on Internet.

5. Information

Any person can find any type of information from Internet. Educational and informative websites are available to download books, tutorials etc. to improve knowledge.

6. Chatting

You can chat with your friends on Internet. You can also talk with them. Different messages, files and information can be sent to them.

Q. Describe the uses of computer in education.

Computer can be used in education field to improve teaching and learning process. Computer is used in colleges to provide the methods of teaching in different ways. It is used to educate students effectively. Many computer-based educational programs are available for learning purpose. Computer can be used in education in the following ways:

1. Computer-Based Training (CBT)

CBT are different program that are supplied on CD-ROM. These programs include text, graphics, and sound. Audio and video lectures are recorded on the CDs. CBT is a low cost solution for educating people. You can train a large number of people easily.

Benefits of CBT

Some important benefits of CBT are as follows:

- Students can learn new skills at their own pace. They can easily acquire knowledge in any available time of their own choice.
- Training time can be reduced.
- CBT contains interactive, attractive and easy material. It encourages the students to learn the topic.
- Planning and timing problems are reduced or eliminated.
- The skills can be taught at any time and at any place.
- It is very cost effective way to train a large number of students locally or at distant places.

2. Computer-Aided Learning (CAL)

Computer aided learning is the process of using information technology to help teaching and enhance learning process. The use of computer can reduce the time that is spent on preparing teaching material. It can also reduce the administrative load of teaching and research. The use of multimedia projector and slides has improved the quality of teaching. It has also helped the learning process.

3. Online Education

Many web sites provide online education. You can download educational material, books and tutorials without going outside. Some universities provide online lectures for the students. Students can ask questions and discuss problems by sending emails to websites.

Q. Describe the use of computers in industry.

Computers are used in industry in different types of systems. Robots are used to control many complex tasks. A **robot** is an automatic programmable machine. It moves and performs mechanical tasks. It is used in different applications. Some applications of robots are as follows:

- Assembling and spray-painting of cars
- Carrying out maintenance on overhead power cables
- Testing blood samples
- Outer space experimental programs

Computer can be used in industry in the following ways:

1. Automated Production Systems

Many car factories are completely computerized. Cars are assembled by computer-controlled robots. These systems work quickly than human beings and becoming popular.

2. Design Systems

Many products are designed using **CAD (Computer Aided Design)**. Computer programs are used to design the model of a product on the computer. After the design is complete, the actual product is produced.

Q. What is the use of Computer-Aided Design (CAD)?

Computer-aided design is used to display designs and build production models using software. It is also used to test these models.

The test is conducted by using the following parameters:

- Compile the parts and quantities lists
- Outline the procedures for production and assembling of the parts
- Transmit the final design directly to the machines

CAD is used in designing new cars, aircrafts, bridges and buildings. CAD systems require high-resolution monitors, input devices like mouse, keyboard, graphic tables and scanners. They also require output devices like printers and plotters. CAD systems can display 3-dimensional design of an object.

Q. What is computer-aided manufacturing? Discuss its benefits.

Computer-Aided Manufacturing

Computer-aided manufacturing is used to control all parts of manufacturing process. CAM software uses digital design output from CAD system. It uses that design to control the production machinery. In this system, computers control all steps of product manufacturing.

Benefits

The benefits of using CAM systems to manufacture things are as follows:

- Product can be manufactured with accuracy
- The quality of all products is consistent
- Productions is much cheaper
- Product design can be modified easily
- A large number of items can be manufactured without any break
- It requires less number of persons for labor

Q. Explain computer simulation with examples? What are its benefits?

Computer Simulation

Computer simulation is a special type of computer model. It creates an artificial model of a system. The model can be used to train the people. It can also be used to get familiar with an environment before entering the environment in the real world. It also reduces the cost of training the people in real world. Computer simulations are used in educational institutes to understand the working of various systems.

Examples

Some examples of computer simulations are as follows:

- The simulation of aeroplane is part of pilot training. The pilot can understand the working different parts of aeroplane using this simulation.
- The students can perform complicated experiments using simulations. It allows the students to get the results quickly. The simulation can include simple graphical or numerical representation of chemical and physical experiments.

Benefits

The benefits of computer simulations are as follows:

- It is cost effective.
- It can be used to train a large number of people easily.
- The same simulation can be used on multiple computers.

Q. What is the use of computer in airline system?

Computers are used in airline systems to control aircrafts and vehicles. The modern aircrafts are controlled by sending electronic signals to different parts of the aircraft. Computer is embedded in the pilot's controls. The pilot can interact with the control room on different airports during his flight.

Computer is also used in airline systems for reservation of seats for the customers. It is used to provide the information about different flights etc.

Q. How computer can be useful in weather forecasting?

Computers are also used in weather forecasting. A computerized weather forecasting system gets the data from different weather stations, airports, satellites etc. The system generates a forecast about the weather.

Weather forecasting is very complex. The perfect forecasting is very difficult and there is always a possibility of variation in the weather. Different organizations use computerized weather forecasting systems. An example is the SPARCO weather forecasting department.

Q. Explain how computers assist us in simplifying our work.

Computer is a machine that works according to the given instructions. It cannot think or decide by itself. It performs a variety of operations on given data and generates use information for the user. The use of computer can simplify our work.

Reasons of using Computers

The main reasons of using computers in our daily life are as follows:

- Computers can work much faster than human beings
- Computers never feel tired and do not require rest.
- Computers can perform those tasks, which are dangerous for human.
- Computers can store a large amount of information.
- Computers can retrieve the stored information very quickly.
- Computers never lose or misplace the stored information.
- Computers work with accuracy and consistency.

Q. Explain some important benefits of using computers.

The benefits of using computers are as follows:

1. Speed

Computer works at a very high speed. It can perform calculations in a fraction of a second. It can perform complex and complicated calculations very easily. It can recall the stored information and transfer information from one location to another. Computer can also move an object around a computer screen very quickly.

2. Consistency

It is difficult for human beings to repeat the same actions with same result. Computer can repeat the same actions consistently. It performs an activity similarly with same results every time.

3. Precision

Computer works with extreme precision. It can detect minute differences that people cannot feel. For example, a computer can connect different parts of a vehicle with exact precision. It will generate an error if there is a slight difference in the joint.

4. Reliability

Computer is a reliable machine. It strictly follows the given instructions without any variation. It processes the data and generates the information with accuracy and consistency. We can rely on the result generated by the computer.

Q. What is E-Commerce? Discuss its role in our daily life.

E-Commerce

E-Commerce stands for **electronic commerce**. E-Commerce means buying, selling and exchanging of products, services and information via computer networks. A person can deal with customers throughout the world. People can buy and sell good on Internet. Even payments can be made using credit cards. E-Commerce is rapidly becoming popular.

Role of E-Commerce

The role of e-commerce in daily life is becoming very important. E-commerce can be used in the following ways:

1. Electronic Banking

Many banks are now introducing electronic banking. Using your computer, you can connect to the bank's computer system via the Internet and control your daily financial dealing from home. It reduces the staff and building of banks. Many customers pay their bills from their bank accounts using this facility.

2. Electronic Shopping

It has become very easy for the people to shop from home using Internet. Different manufacturers present their products on the Internet. People can browse the website, place an order and even make a payment using credit card. It has made shopping very easy.

3. Conducting Auctions

Many websites provide the facility of auction. People participate in the auction to purchase a product. They can also pay the price using their credit cards etc. A popular website that provides this facility is eBay.

4. Marketing and Advertising

E-commerce is playing an important part to market and advertise products all over the world. The use of popular websites can be an effective way of introducing a product to the customers.

5. Providing Customer Services

Businessmen can interact with their customers using the Internet. They can discuss different issues about their products. They can also deal with their complaints and provide different services to them.

6. Online Travel Reservations

Online travel reservation is a popular use of e-commerce. People can reserve seats in airline flights, hotels or car using the Internet.

7. Online Trading

Online trading is a process of conducting business using the Internet. The stockbrokers can do all trading activities electronically. They can submit and receive bids using computers. They can also interconnect with computer screens where brokers match buyers with sellers. It reduces the cost as no paper or special building is required to conduct these activities.

8. Videoconferencing

Video conferencing is a type of conferencing in which video cameras and microphones are used for discussions. It provides an environment of normal meeting. It enables participants to see, hear and present material to one another as if they are in the same room. Video conferencing can speed up business process and procedures.

Q. Briefly discuss different types of e-commerce.

There are different types of e-commerce. These are as follows:

1. Business-to-consumer

Business-to-consumer or **B2C** e-commerce consists of the sale of goods and services to the general public. In this type, customers or consumer can visit the website and purchase goods online using credit cards.

2. Consumer-to-consumer

Consumer-to-consumer or **C2C** e-commerce takes place between two consumers. For example, one consumer sells an item through online auction. The other consumer purchases the item by offering highest bid.

3. Business-to-business

Business-to-business or B2B e-commerce takes place between two businesses. One business provides services to other business. For example, many advertising companies advertise the products of another company.

Q. Define the term video conferencing. Discuss its benefits.

Video conferencing is a type of conferencing in which video cameras and microphones are used for discussions. It provides an environment of normal meeting. It enables participants to see, hear and present material to one another as if they are in the same room. Video conferencing can speed up business process and procedures.

Benefits of Video Conferencing

Some important benefits of video conferencing are as follows:

- It is an easy way of conducting meetings.
- It is very cost effective as it saves money required for traveling.
- It saves a lot of time and effort.

Many companies use video-conferencing to deal with other companies. In video-conferencing people residing at various places can talk with each other. They can see one another. It is very useful in this busy age. It prevents a lot of time and costs.

Short Questions

Q.1. Explain the importance of using computer.

The use of computer technology is very important in every field of life. The use of computers makes different tasks easier. It also saves a lot of time and effort. It also reduces overall cost to complete a particular task.

Q.2. How computer can be used in marketing?

Marketing applications provide information the products to the customers. Computer is also used to manage the distribution system, advertising and selling activities. It can also be used in deciding pricing strategies.

Q.3. Describe the use of computer in stock exchange.

The stockbrokers can do all trading activities electronically with computer. They can submit and receive bids using computers. It reduces the cost as no paper or special building is required to conduct these activities.

Q.4. How banks can benefit from the use of computer?

The use of computers in banks has provided many benefits. It saves a lot of time and provides convenience for the customer. Banks use mainframe computers to maintain customer accounts. The transactions are handled easily and quickly with computers.

Q.5. State the purpose of ATM.

ATM stands for Automated Teller Machine. ATM is used to withdraw cash directly from the machine without interaction of any person. Many banks provide credit cards that can be used to purchase different items using the Internet.

Q.6. How computer can be used in departmental stores?

In departmental stores, cashier can enter the sales data in computer by using barcode reader. The computer uses this input to calculate bill. The record of sale can be stored in the computer. It can be used to analyze accounts and stock inventory.

Q.7. How computer can be used in marketing?

Office automation is the process of automating office tasks using computers. Many types of tasks are performed in an office. These tasks include decision-making, data manipulation, document handling, communication and storage.

Q.8. List different computerized systems used in office automation.

Some computerized systems used in an office are as follows:

- Document Management System
- Message Handling System
- Office Support System

Q.9. Write the purpose of document management system.

Document Management System provides different facilities for office automation. It may include applications like word processing, desktop publishing, reprographic, image processing and archival storage applications.

Q.10. Define desktop publishing.

Desktop publishing is used to make these documents attractive with photos and graphics etc. It is used to publish these documents.

Q.11. Define reprographics.

Reprographics is a process of reproducing multiple copies of a document.

Q.12. What is the use of image processing system?

Image processing is used to scan and store an image in the computer. It can also be used to modify and improve the quality of the images.

Q.13. What is the use of Message Handling System?

Message Handling System is used to send messages or documents from one location to another. Many techniques are used for this purpose such as fax, email and voice mail etc.

Q.14. How can office support system help in office automation?

Office Support System is used to coordinate and manage the activities of a workgroup. The members of a workgroup can share their work and coordinate with one another.

Q.15. Describe computer-based training.

CBT are different program that are supplied on CD-ROM. These programs include text, graphics, and sound. Audio and video lectures are recorded on the CDs. CBT is a low cost solution for educating people. You can train a large number of people easily.

Q.16. Write some benefits of computer-aided learning.

Computer aided learning is the process of using information technology to help teaching and enhance learning process. The use of computer can reduce the time that is spent on preparing teaching material. It can also reduce the administrative load of teaching and research. The use of multimedia projector and slides has improved the quality of teaching.

Q.17. What is a robot?

Computers are used in industry in different types of systems. Robots are used to control many complex tasks. A robot is an automatic programmable machine. It moves and performs mechanical tasks. It is used in different applications.

Q.18. How robots are used in industry?

Some applications of robots are as follows:

- Assembling and spray-painting of cars
- Carrying out maintenance on overhead power cables
- Testing blood samples
- Artificial satellites
- Radioactive environments

Q.19. Explain computer-aided design.

Computer-aided design is used to display designs and build production models using software. It is also used to test these models. CAD is used in designing new cars, aircrafts, bridges and buildings.

Q.20. Describe computer-aided manufacturing process.

Computer-aided manufacturing process is used to control all parts of a manufacturing process. CAM software uses digital design output from CAD system. It uses that design to control production machinery. In this system, computers control all steps of manufacturing.

Q.21. Differentiate between CAD and CAM.

Computer-aided design (CAD) is the use of computers to design products. Computer-aided manufacturing (CAM) is the use of computers to control the manufacture of parts.

Q.22. What is computer simulation?

A computer simulation is a special type of computer model. It creates an artificial model of a system. The model can be used to train the people. It can also be used to get familiar with an environment before entering the environment in the real world. It also reduces the cost of training the people in real world.

Q.23. How computer can be used in airline system?

Computers are used in airline systems to control aircrafts and vehicles. The pilot can interact with the control room on different airports during his flight. Computer is also used in airline systems for reservation of seats for the customers.

Q.24. How computer can be useful in weather forecasting?

A computerized weather forecasting system gets the data from different weather stations, airports, satellites etc. The system generates a forecast about the weather.

Q.25. Explain how computers assist us in simplifying our work.

Computer is a machine that works according to the given instructions. It cannot think or decide by itself. It performs a variety of operations on given data and generates use information for the user. The use of computer can simplify our work.

Q.26. List some important features of computer.

The benefits of using computers are speed, consistency, precision and reliability.

Q.27. Define E-Commerce.

E-Commerce stands for electronic commerce. E-Commerce means the buying, selling and exchanging of products, services and information via computer networks. A person can deal with his customers throughout the world. People can buy and sell good on Internet.

Q.28. What do you know about electronic banking?

Electronic banking allows people to connect to bank's computer system via the Internet and control financial dealing from home. It reduces the staff and building of banks. Many customers pay their bills from their bank accounts using this facility.

Q.29. What is electronic shopping?

It has become very easy for the people to shop from home using Internet. Different manufacturers present their products on the Internet. People can browse the website, place an order and even make a payment using credit card. It has made shopping very easy.

Q.30. Define the term video conferencing.

Video conferencing is a type of conferencing in which video cameras and microphones are used for discussions.It enables participants to see, hear and present material to one another as if they are in the same room. Video conferencing speeds up business process.

Q.31. List some benefits of videoconferencing.

Video conferencing is an easy way of conducting meetings. It is very cost effective as it saves money required for traveling. It saves a lot of time and effort.

Q.32. What is online education?

Many web sites provide online education. You can download educational material, books and tutorials without going outside. Some universities provide online lectures for the students. Students can ask questions and discuss problems by sending emails to websites.

Q.33. How is ecommerce advantageous in modern business? Give three reasons.

Ecommerce is advantageous as an organization at distant place can interact with customers easily. It enables to search information, products and services online. Companies using e-commerce can offer their products and services to more customers in time. The cost of conducting business online is much lower as traditional physical resources are not needed.

Multiple Choice

1. **CBT stands for:**
   a. Computer Based Trade b. Computer Based Training
   c. Certificate Based Training d. None of the above
2. **The benefit of CAD may be summed up as:**
   a. Accuracy b. Repeatability c. Speed & flexibility of production d. All
3. **Computer at home can be used for:**
   a. Keeping records b. Making budgets c. Watching movies d. All
4. **Many products are designed by using?**
   a. ATM b. ROBOT c. CAD d. CAM
5. **_____ is used to control all the parts of a manufacturing process:**
   a. ATM b. CAD c. CAM d.MICR
6. **A_____ is an automatic pr ogrammable machine.**
   a. CAD b. CAM c. CBT d. Robot
7. **Benefits of using computers are:**
   a. Speed b. Reliable c. Storage d. All of these
8. **A word processor can be used to:**
   a. Write Text b. Edit Text c. Print Text d. All
9. **CAL stands for::**
   a. Computer Aided Learning b. Computer Assist Learning
   c. Computer Added Learning d. None of the above
10. **Typically, an ATM can be used to:**
    a. Keep records b. Make budgets c. Watch Movies d. None
11. **Modern computer can perform calculations or process at:**
    a. Per second b. Per minute c. Nino second d. None
12. **CAT stands for:**
    a. Computerize Axial Topography b. Computer Axial Topography
    c. Computer Aided Topography d. None of the above
13. **Computer based weather forecasting depends on accurate collection of data from:**
    a. Television b. Weather stations c. Radar d. Antenna
14. **MICR stands for:**
    a. Magic in Character Redo b. Magnetic Ink Character Recorder
    c. Magnetic Ink Character Reader d. None of the above
15. **Which of the following is relevant to office automation?**
    a. Document Management system b. Message-handling systems
    c. Office supports systems d. All
16. **Which of the following is related to business?**
    a. Marketing b. Stock exchanges c. Banks d. All
17. **Which of the following is not included in Document Management System?**
    a. Word-processing b. Desktop publishing c. Reprographic d. E-Shopping
18. **The fly-by-wire system is used in:**
    a. Medical field b. Airline c. Education field d. None

19. **Which of the following is NOT true regarding CAM?**
    a. It is used in inflexible manufacturing.
    b. It improves the overall efficiency of the manufacturing process.
    c. It reduces the time needed to set up machines or robots for next production run.
    d. It makes it possible for a company to respond to a customer's unique needs.
20. **Most applications of robotics are in which area?**
    a. Cooking b. Manufacturing c. Teaching d. Farming
21. **Electronic commerce (e-commerce) is the process of**
    a. Sharing of business information
    b. Maintaining business relationship
    c. Conducting business transactions through the use of telecommunication networks
    d. All
22. **Which of the following is not an example of e-commerce?**
    a. Electronic banking b Electronic shopping
    c. Online chatting d. Online education
23. **Many banks provide the facility of:**
    a. CAD b. CAM c. ATM d. CBT
24. **CBT software is used in:**
    a. Education b. Forecasting c. Manufacturing d. None of these

Answers

1. b	2. d	3. d	4. c	5. c	6. d
7. d	8. d	9. a	10. d	11. d	12. a
13. b	14. c	15. d	16. d	17. d	18. b
19. a	20. b	21. d	22. c	23. c	24. a

Fill in the Blanks

1. The cheques are read by _____device.
2. Electronic banking allows individual to obtain cash instantly from an_____.
3. A robot is an automatic programmable machine that moves and performs _____ tasks.
4. An electronic banking is also known as_____.
5. _____is a type of conferencing in which video cameras and microphones capture sight and sound transmission over network.
6. ____ is an automatic programmable machine to move and perform mechanical tasks.
7. Office support system enables to coordinate and mange the activities of_____.
8. FAX stands for _____.
9. ATM stands for _____.
10. VCR stands for _____.
11. CAD_____.

Answers

1. Magnetic Ink Character Reader		2. ATM
3. Mechanical	4. Cyber banking	5. Video conferencing
6. Robot	7. Workgroup	8. Facsimile
9. Automated Teller Machine		10. Video Cassette Recorder
11. Computer Aided Design		

True / False

1. CBT is more expensive than non-CBT training.
2. Videoconferencing is an advanced form of teleconferencing
3. The e-shop has opened for limited time period on the web sites.
4. CAL should be described as the use of information technology to assist in the teaching and learning processes.
5. Barcode reader can be read all types of ink characters
6. Fax machine can be inserted inside computers.
7. a robot is an automatic programmable machine.
8. a computer simulation is a special type of computer hardware.
9. an electronic banking is also know as cyber-banking
10. Modern computer can perform calculations at a second.

Answers

1. T	2. T	3. F	4. T	5. F
6. F	7. T	8. F	9. T	10. F

Chapter 5

Computer Architecture

Q. Describe Von Neumann design.

In 1951, a scientist **Von Neumann** and his team proposed a design of **stored program computer**. Program and data are stored in computer memory according to this design. The computer reads the instructions one by one and executes them. It is very simple design. It has proved to be very powerful and general-purpose. It is the basis of most modern computer of today.

Q. Explain the architecture of computer system. Which components are included in the architecture of modern stored program machine?

Computer Architecture

A computer is a combination of various components. These components perform different functions. All components work together and communicate with one another. The way in which these components are connected with one another is called **computer architecture.**

Different components of computer architecture are as follows:

1. Control Unit

Control unit is an important component of CPU. It acts like a supervisor of computer. It controls all activities of computer. It performs the following operations:

1. It fetches instruction from main memory.
2. It interprets the instruction to find what operation is to be performed.
3. It controls the execution of instruction.

2. ALU (Arithmetic and Logic Unit)

ALU is a part of CPU. Actual execution of instructions takes place in this part. All arithmetic and logical operations are performed in ALU. It consists of two units:

- Arithmetic unit
- Logic unit

a) Arithmetic Unit

Arithmetic unit of ALU performs basic arithmetic functions like addition, subtraction, multiplication and division.

b) Logic Unit

Logic unit of ALU performs logical operations like comparing two data items to find which data item is greater than, equal to, or less than the other.

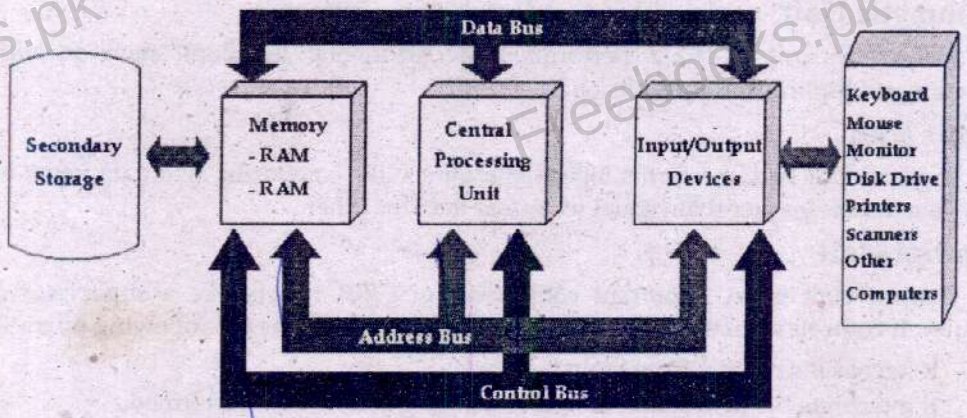


Figure: Architecture of main components of computer

3. Main Memory

Main memory is an important component of computer system. It is used to store program and data that are being executed. It is also known as **working area** of a computer system.

4. I/O Unit

I/O unit controls processor's communication with peripheral devices such as monitor, disk drive and printer connected to the computer system.

5. Bus Interconnection

Bus interconnection is also an important component of a computer system. A computer system consists of CPU, main memory and I/O units. These components have to be connected to transfer data from one component to another. The use of buses to connect different components is known as **bus interconnection**.

Q. What is CPU? Describe briefly.

CPU stands for **Central Processing Unit**. It is the brain of the computer. It is the most important component of a computer. It is also called **processor**. A computer cannot work without CPU. All computers must have a central processing unit.

CPU is located on the **motherboard**. It carries out most of the work of a computer. CPU performs all operations on data according to the given instructions. It executes instructions and tells other parts of computer what to do. Most of the work consists of calculations and data transfer. CPU consists of two main units known as **arithmetic & logical unit** and **control unit**. These components work together to perform processing operations.

1. ALU (Arithmetic and Logic Unit)
2. CU (Control unit)

1. ALU (Arithmetic and Logic Unit)

ALU is a part of CPU. Actual execution of instructions takes place in this part. All arithmetic and logical operations are performed in ALU. It consists of two units:

- Arithmetic unit
- Logic unit.

i. Arithmetic Unit

Arithmetic unit of ALU performs basic arithmetic functions such as addition, subtraction, multiplication and division.

ii. Logic Unit

Logic unit of ALU performs logical operations like comparing two data items to find which data item is greater than, equal to, or less than the other.

2. Control Unit

Control Unit is an important component of CPU. It acts like a supervisor of the computer. It controls all activities of computer system. It performs the following operations:

1. It fetches instruction from main memory.
2. It interprets the instruction to find what operation is to be performed.
3. It controls the execution of instruction.

Q. What is main memory? Describe its structure. How data stored in main memory is accessed?

Main Memory

Main memory is an important component of computer system. It is used to store program and data that are being used. It is also known as **working area** of a computer system. A computer cannot work without main memory.

Structure of Main Memory

Main memory in the modern computer is built in the form of a chip. The chip is made of a semi conductor material. The chip consists of thousand or millions of cells. Each cell can store one bit i.e. 0 or 1.

The cells in main memory are logically organized as groups of 8 bits. One group of 8 bits is known as **byte**. Each byte in the memory is assigned a unique number. This number is known as the **address** of the byte.

Accessing Data in Main Memory

Main memory is a sequence of bytes. CPU and other components can access any byte of main memory by specifying its address. Different bytes can be accessed randomly. The memory is built from electronic components. Accessing any part of memory takes equal time.

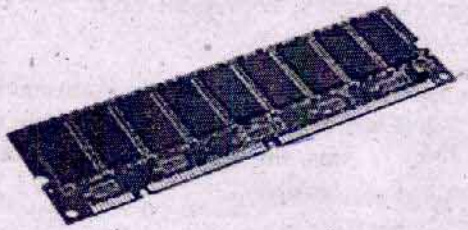
No mechanical movement is required when data is accessed from main memory. That is why the main memory is very fast as compared to other storage devices such as magnetic disk etc. There are two types of memory known as RAM and ROM.

Q. What is RAM? Describe different types of RAM.

RAM

RAM stands for **Random Access Memory**. It is also called **direct access memory**. Random access means that each individual byte in entire memory can be accessed directly. RAM is used to store data and instructions temporarily.

RAM is a **volatile memory**. It means that its contents are lost when the power is turned off. RAM is a **read/write memory**. CPU can read data from RAM and write data to RAM. It is used to store data and instruction while it is being executed. RAM is also called **main memory** or **primary storage**.



RAM is built by using two different techniques:

i) DRAM

DRAM stands for **Dynamic Random Access Memory.** It is a type of memory that is used in most computers. It is the least expensive kind of RAM.

DRAM requires an electric current to maintain its electrical state. The electrical charge of DRAM decreases with time that may result in loss of data. DRAM is recharged or refreshed again and again to maintain its data. The processor cannot access the data of DRAM when it is being refreshed. That is why it is slow.

ii) SRAM

SRAM stands for **Static Random Access Memory.** The memory cells are made from digital gates. Each cell can store data without any need of frequent recharging. CPU does not need to wait to access data from SRAM during processing. That is why it is faster than DRAM. It utilizes less power than DRAM. SRAM is more expensive. It is normally used to build a very fast memory known as **cache memory**.

Q. What is ROM? Discuss its different types.

ROM stands for **Read Only Memory**. The instructions in ROM prepare the computer for use. These instructions can only be read but cannot be changed or deleted. It is not possible to write new information or instructions into the ROM.

ROM stores data and instructions permanently. When the power is switched off, the instructions stored in ROM are not lost. That is why ROM is known as **non-volatile memory.**

The information in ROM is stored by the manufacturer. When the computer is switched on, the instructions in ROM are automatically loaded into the memory of computer.

Types of ROM

Different types of ROM are as follows:

1. PROM

PROM stands for **Programmable Read Only Memory**. This form of ROM is initially blank. The user or manufacturer can write data and programs on it using special devices. The user can write data and instructions on it only once. If there is any error in writing the instructions, the error cannot be removed from PROM. The chip becomes unusable.

2. EPROM

EPROM stands for **Erasable Programmable Read Only Memory**. This form of ROM is initially blank. The user or manufacturer can write data and programs on it using special devices. The data and programs written on it can be erased with special devices using ultraviolet rays. The user then can write new program on it.

3. EEPROM

EEPROM stands for **Electronically Erasable Programmable Read Only Memory**. In this memory, user can erase and write instructions with the help of electrical pulses. If there is any error in writing the instructions, the user can erase the contents electronically. The contents of EEPROM can be modified easily.

Q. List out some differences between SRAM and DRAM.

SRAM	DRAM
1. It is faster than DRAM.	1. It is slower than SRAM.
2. It is more expensive.	2. It is less expensive.
3. It does not need to be power-refreshed.	3. It has to be refreshed after each read operation.
4. It utilizes less power.	4. It utilizes more power.

Q. List out some differences between RAM and ROM.

RAM	ROM
1. RAM is a temporary memory.	1. ROM is permanent memory.
2. The data in RAM can be changed or deleted.	2. The instructions written in ROM cannot be changed or deleted
3. Instructions in RAM change continuously as different programs are executed and new data is processed.	3. It is not possible to write new information or instructions in ROM.
4. RAM is a volatile memory.	4. ROM is non-volatile memory.
5. The instructions are written into the RAM at the time of execution.	5. The instructions are written into ROM at manufacturing time.

Q. List out some differences between PROM and EPROM.

PROM	EPROM
1. It is a programmable memory.	1. It is erasable programmable memory.
2. The user can write instructions on PROM only once.	2. The user can write instructions on EPROM many times.
3. The instructions written by the user cannot be erased from PROM.	3. The instructions written by the user can be erased from EPROM.
4. If there is an error while writing on PROM, it becomes unusable.	4. If there is an error while writing on EPROM, it can still be used again.
5. It provides less usability as instructions are written only once.	5. It provides more usability as instructions are written many times.

Q. What is cache memory? How does it affect the working of CPU?

A **cache** (pronounced "cash") is a small and very fast memory. It is designed to speed up the transfer of data and instructions. It is faster than RAM. The data and instructions that are most recently or most frequently used by CPU are stored in cache memory.

The data and instructions are retrieved from RAM when CPU uses them for first time. A copy of that data or instructions is stored in cache. The next time the CPU needs that data or instructions, it first looks in cache. If the required data is found there, it is retrieved from cache memory instead of main memory. It speeds up the working of CPU.

Q. What is bus interconnection? Explain different types of buses.

Bus Interconnection

A computer system consists of different devices such as CPU, main memory and I/O devices. These devices are connected to an internal communication channel of the computer system to transfer data between these devices. The internal communication channel of the computer system is called **bus interconnection**.

Computer Bus

A **bus** consists of a set of parallel lines. It is used to transfer data between different components of the computer. One line of bus can transfer one bit at a time.

The capacity of computer bus depends on the number of data lines in it. A bus with 16 lines can carry 16 bits or 2 bytes of data at a time. A bus with 32 lines can carry 32 bits or 4 bytes of data at a time. The amount of data that a bus can be carry at one time is called **bus width**.

Types of Buses

Different types of buses are as follows:

1. System Buses

System bus is used to connect the main components of a computer such as CPU and main memory. System buses are part of motherboard. Computers normally have system bus of 70 – 100 lines. Different types of system buses are as follows:

- Data Bus
- Address Bus
- Control Bus

2. Expansion Buses

Expansion bus is used to connect CPU with peripheral devices such as mouse, keyboard printer, modem and scanner etc.

Q. Discuss different types of system buses.

Different types of system buses are as follows:

1. Data Bus

Data bus is the most common type of bus. It is used to transfer data between different components of computer. The number of lines in data bus affects the speed of data transfer between different components. The data bus consists of 8, 16, 32 or 64 lines. A 64-line data bus can transfer 64 bits of data at one time.

The data bus lines are **bi-directional**. It means that:

1. CPU can read data from memory using these lines
2. CPU can write data to memory locations using these lines

2. Address Bus

Many components are connected to one another through buses. Each component is assigned a unique ID. This ID is called the address of that component. If a component wants to communicate with another component, it uses address bus to specify the address of that component. The address bus is a unidirectional bus. It can carry information only in one direction. It carries address of memory location from microprocessor to the main memory.

3. Control Bus

Control bus is used to transmit different commands or control signals from one component to another component. Suppose CPU wants to read data from main memory. It will use control bus to send the **memory read** command to the main memory of computer. The control bus is also used to transmit control signals like **ACKS (Acknowledgement signals)**. A control signal contains the following:

- **Timing Information:** It specifies the time for which a device can use data and address bus.
- **Command Signal:** It specifies the type of operation to be performed.

Suppose that CPU gives a command to the main memory to write data. The memory sends acknowledgement signal to CPU after writing the data successfully. CPU receives the signal and then moves to perform some other action.

Q. Write some commands related to bus interconnection.

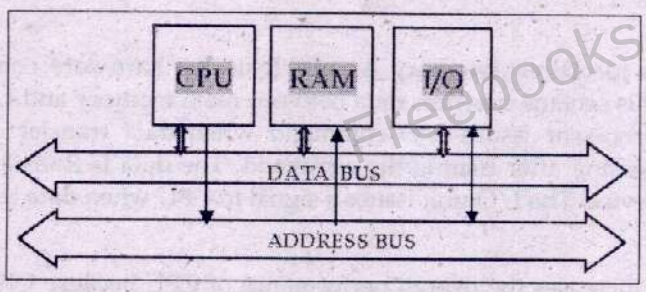
Some commands related to bus interconnection are as follows:

Command	Purpose
MEMORY WRITE	Write data to a given location in main memory
MEMORY READ	Read data from a given location in main memory
I/O WRITE	Write data to a given output device
I/O READ	Read data from a given input device
BUS REQUEST	Request for a control on the bus for transmitting data
BUS GRANT	Indicate the grant of the bus to a device

Q. Describe I/O unit of a computer system.

The **I/O unit** is an important component of a computer system. A computer system has many input and output devices such as keyboard and mouse etc. These devices are different from one another in their organization.

The data transfer rates handled by these devices are also different. They also support different formats of data. It is not possible to connect all these devices directly to the system bus due to these differences.



It is difficult for CPU to control these devices directly as it can waste a lot of CPU time. Suppose a CPU waits for the completion of an I/O operation. It cannot perform any other task during this time. It affects the overall performance of computer.

A special hardware component I/O unit is used to avoid all difficulties. It works as an interface between CPU and I/O devices. It carries out I/O tasks without involving CPU directly. The I/O unit is connected to the bus. The processor and all other devices are connected to the I/O unit.

Responsibilities of I/O Unit

The I/O unit is responsible for the following:

1. It monitors the states of different devices attached to it.
2. It manages the speed difference between the processor and I/O devices.

Q. Explain different ways of transferring data from peripheral devices to the computer.

Different peripheral devices are used to transfer data to computer. The speed of these devices is much slower than processor. A lot of CPU time may be wasted if processor waits for the completion of data transfer. It is very important to transfer data in such a way that CPU time may not be wasted while data is being transferred from peripheral device to the computer. The two main ways of transferring data from peripheral devices to computer are:

1. Interrupts
2. DMA

1. Interrupts

An **interrupt** is a signal. In this scheme, the processor issues a command to an I/O device for input or output operation. The device generates an interrupt signal to the processor when it becomes ready. CPU suspends all other processing when it receives an interrupt. CPU then performs I/O operation.

Advantages

The advantages of this scheme are as follows:

1. It requires no additional hardware.
2. It is simpler to implement.

Disadvantage

All other processing is suspended when CPU performs I/O operations. It reduces the overall performance of CPU.

2. DMA

DMA stands for **Direct Memory Access**. It uses a hardware component known as **DMA controller**. This scheme transfers data between main memory and I/O devices without using CPU. The processor issues I/O command when data transfer is required. It can perform other processing after issuing the command. The data is transferred between main memory and I/O device. The I/O unit issues a signal to CPU when data transfer is complete.

Advantage

This scheme increases the overall performance of CPU because CPU does not need to wait for the completion of I/O operation.

Disadvantages

The disadvantages of this scheme are as follows:

1. It is more complex.
2. It also requires more hardware.

Q. How is data transferred from CPU to memory? Explain in steps.

Data is transferred from CPU to memory by using address bus and data bus. The process of transferring data from CPU to memory consists of different steps. These steps are as follows:

- CPU places the address of main memory on address bus.
- CPU places the address of the data location on address bus.
- Main memory sees the address on address bus.
- Main memory writes the data to the specified location in the memory.

Q. What are CPU registers? Briefly describe special-purpose registers.

Register

Register is a small high-speed memory inside CPU. It is used to store data and instructions temporary. Data is stored in registers from main memory for execution. CPU contains a number of registers. Each register has a predefined function.

Register size determines how much information it can store. The size of registers is in bytes. Each byte can store one character of data. A register can be of 1, 2, 4 or 8 bytes. Bigger size of register increases the performance of CPU.

Special Purpose Registers

Special-purpose registers are normally used by CPU. These registers are as follows:

1. Program Counter (PC)

Program counter is used to store the address of the next instruction to be fetched for execution. When the instruction is fetched, the value of program counter is incremented. It now refers to the next instruction.

2. Instruction Register (IR)

Instruction register is used to store the fetched instructions. The instruction is also decoded in this register.

3. Memory Address Register (MAR)

Memory address register is used to store memory address being used by CPU. When CPU wants to read or write data in memory, it stores the address of that memory location in this register.

4. Memory Buffer Register (MBR)

Memory buffer register is used to store the data coming from the memory or going to the memory.

5. Stack Pointer Register

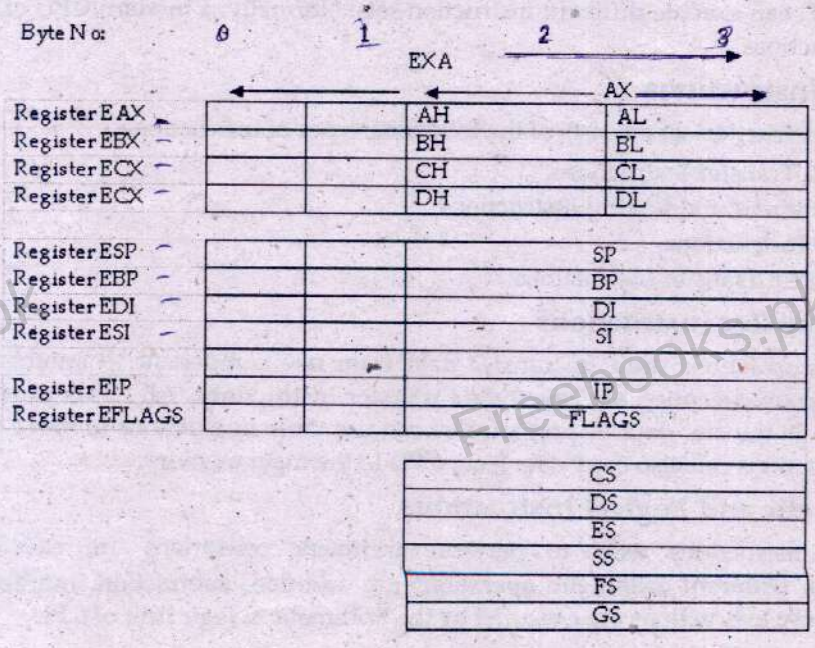
A stack is set of memory locations in which data is stored and retrieved in an order. This order is called **Last-In-First-Out (LIFO)**. The data item stored at the top of stack is retrieved before retrieving the item below it. Stack pointer registers are used to manage stack in computer.

Q. Briefly discuss different general-purpose registers.

General-purpose registers are used in mathematical and logical operations. These registers are part of ALU. Accumulator register is a general-purpose register. There are four types of accumulative registers called **EAX, EBX, ECX** and **EDX**.

The size of these registers can be 1 to 4 bytes. The two-byte data registers **AX, BX, CX, DX** contain two parts of 8-bit size. These parts are separately accessible. The lower-order bytes are **AL, BL, CL** and **DL**. The high-order bytes are **AH, BH, CH** and **DH**.

- A stands for **Accumulator**.
- B stands for **Base**.
- C stands for **Count**.
- D stands for **Data**.



Different general-purpose registers are as follows:

- **Accumulator Register (AX):** It is used for arithmetic and data operations.
- **Base Register (BX):** It is used for arithmetic and data movement. It has special addressing capabilities.
- **Counter Register (CX):** It is used for counting purpose. It acts as a counter for repetitions or loops.
- **Data Register (DX):** It is used for division and multiplications.

Q. Discuss different address or segment registers?

Segment is a block of memory. Address or segment registers are used to store the address of memory blocks of the instruction being executed. There are four segment registers. These are CS, DS, ES and SS. The size of each register is two bytes. These registers are used with IP register or index registers DI and SI. Different segment registers are as follows:

- **Code Segment (CS):** It is used to store the base location of all executable instructions in the program. It is used with IP register to fetch program instruction from memory.
- **Data Segment (DS):** It is used as the default base location for memory variables. It is used with DI or SI registers to refer to the data in memory.
- **Extra Segment (ES):** It is used as an additional base location for memory variables.
- **Stack Segment (SS):** It contains the base location of the current program stack.

Q. What is instruction set? Explain different types of operations performed by the computer.

Instructions Set

A set of all instructions that a CPU can perform is called **instruction set**. Different types of CPU can execute different instruction sets. Normally, a modern CPU can execute 80 to 120 instructions.

Types of Instructions

The instruction set consists of the following types of instructions:

1. Data Transfer Instructions
2. Arithmetic and Logical Instructions
3. I/O Instructions
4. Control Transfer Instructions

1. Data Transfer Instructions

The instructions used to transfer data from one component to another component during program execution are called **data transfer instructions**. All CPUs provide different instructions to transfer data. A programmer can use these instructions to move data in CPU. These instructions can also copy data from CPU to the main memory.

2. Arithmetic and Logical Instructions

The instructions used to perform arithmetic operations are called **arithmetic instructions**. Different arithmetic operations are addition, subtraction, multiplication and division. These instructions are executed by the arithmetic & logic unit of CPU.

The instructions used to perform logical operations are called **logical instructions**. A logical operation is the comparison of two data values. Possible comparisons are as follows:

- Greater than (>)
- Equal to (=)
- Less than (<)

These instructions are also executed by the Arithmetic & Logic unit of CPU.

3. I/O Instructions

Every CPU provides the operations of reading data from peripheral devices and writing data to peripheral devices. These devices include keyboard, mouse and disks etc. A programmer can use I/O operations by issuing different input and output instructions.

4. Control Transfer Instructions

The instructions used to change the sequence of instructions of a program are called **control transfer instructions**. These instructions transfer the execution control to a certain part of program instead of next instruction. Some examples of these operations are **JUMP** and **JUMPZ** (Jump if zero) etc.

Q. What is instruction format? Explain various instructions code formats.

An **instruction** is a statement that tells the computer to do something. The way an instruction is given is called **instruction format**.

A computer has a variety of instruction formats. The control unit of CPU is responsible to interpret the instruction code. The control unit also provides the necessary control function required to process the instruction. A simple instruction format consists of 16 bits.

There are two parts of instruction code format:

1. Operand Code
2. Address of Operand

1. Operand Code

The **operand code** specifies the operation to be performed by the computer such as **ADD, SUB and MOV** etc. It takes 4 bits. An operand can be a value or register number on which the operation is performed.

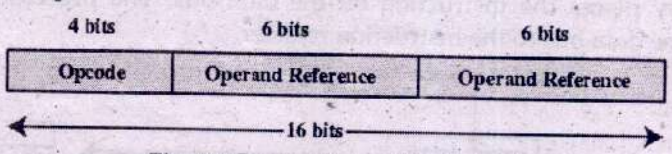


Figure: General Instruction Format

2. Address of Operand

The address of operand refers to a location in main memory where the value is stored.

Types of Instruction Formats

Different types of instructions formats are as follows:

1. Zero-Address Instruction Format

In zero-address instruction format, an address field is absent in the instruction. A stack-organized computer does not use an address field for the instructions like ADD and MUL. However, the instructions such as PUSH and POP require an address field to specify the operand that communicates with the stack.

2. One-Address Instruction Format

This format uses only one address field. It uses one accumulator register (AC) for all data manipulation. A second register is required for multiplication and division.

3. Two-Address Instruction Format

This format uses two address fields. Each address field can specify either a register or memory address. It is the most common instruction format. The examples of this instruction format are MOV, ADD, CMP and BIS.

4. Three-Address Instruction Format

This format uses three address fields. The computer can use each address field to specify register or memory operand. Its advantage is that the result of arithmetic expressions is short. The disadvantage is that the binary-coded instructions require many bits to specify three addresses.

Q. Explain the Fetch-Decode-Execute cycle of CPU.

Most modern processors work on **fetch-decode-execute** principle. This is also called **Von Neumann Architecture**.

When a set of instructions is to be executed, the instructions and data are loaded in main memory. The address of the first instruction is copied into the program counter. The execution of an instruction by a processor is divided in three parts. These parts are **Fetch**, **Decode**, and **Execute**.

1. Fetch Instruction

In the first step, the processor fetches the instruction from the memory. The instruction is transferred from memory to **instruction register**.

In the following figure, the processor is ready to fetch instruction. The **instruction pointer** contains the address 0100. This value is placed on the address bus and a **READ** signal is issued on the control bus. The memory receives the signal and finds the contents of memory location 0100. The memory location 0100 contains the instruction **MOV AX, 0**.

The memory places the instruction on the data bus. The processor then copies the instruction from the data bus to the instruction register.

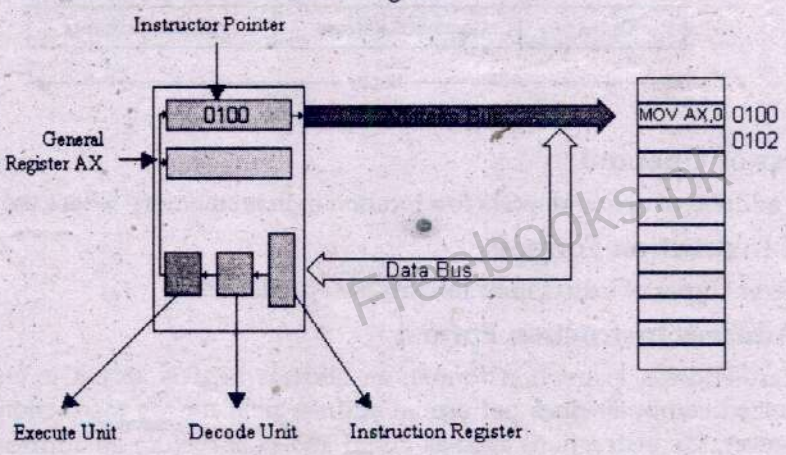


Figure: Fetch instruction

2. Decode Instruction

In this step, the instruction is decoded by the processor. The processor gets any operand if required by the instruction. For example, the instruction **MOV AX, 0** stores the value 0 in AX register. The processor will fetch the constant value 0 from the next location in memory before executing the instruction.

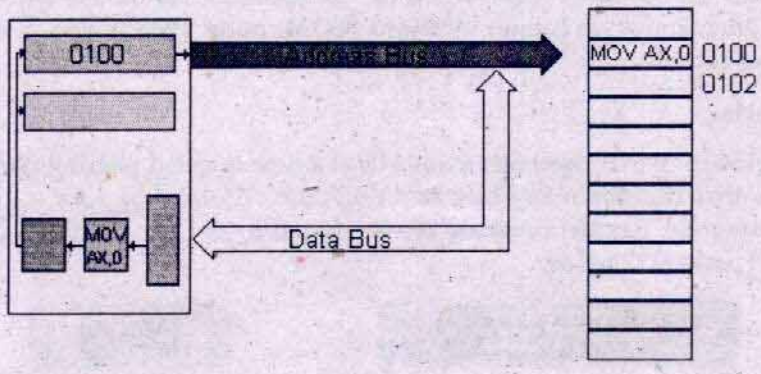


Figure: Decode instruction

In the above figure, the processor transfers the instruction from instruction register to the decode unit. The instruction tells the computer to store 0 into AX register. The decode unit now has all the details of how to do this.

3. Execute Instruction

In the last phase, the processor executes the instruction. It stores 0 in register AX.

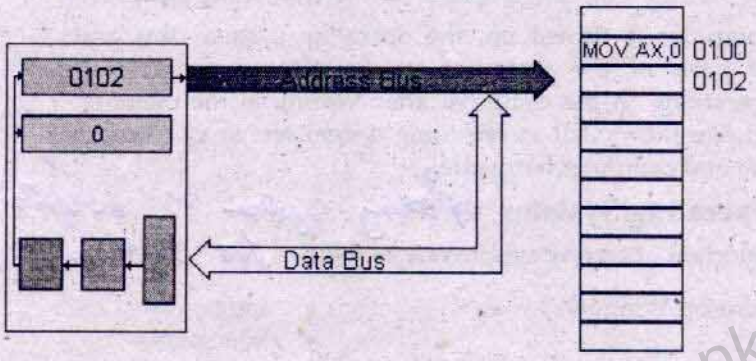


Figure: Execute cycle, executing the instruction

In above figure, the processor executes the instruction **MOV AX, 0**. Finally, it adjusts the **instruction pointer** to point to next instruction to be executed stored at address 0102.

Q. What are ports? Differentiate between serial and parallel ports.

A port is an interface or point of attachment. It is used to connect peripheral devices with computer such as printers, keyboards or mouse. Each type of port operates at a certain speed. The speed is measured in **kilobits per second (Kbps)** or **megabits per second (Mbps)**.

Types of Ports

Different types of ports are as follows:

1. Serial Ports

A type of interface that transmits one bit at a time is called **serial port**. It is usually used to connect devices that do not require fast data transmission like mouse and keyboard etc. Serial ports are often known as **communications (COM) ports**. Data travels over a serial port at 115 kilobits per second.

2. Parallel Ports

A type of interface that transmits many bits at a time is called **parallel port**. It is used to connect devices that transfer many bits at a time and require fast data transmission like printer and scanner etc. Parallel ports are often referred to as **Line Printer (LPT) ports**. The speed of parallel ports is 12 Mbps.

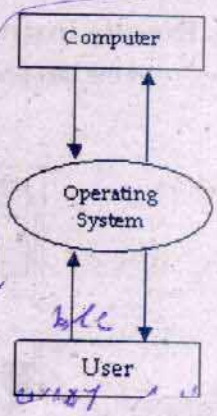
Parallel Port for printer

Serial Port

Q. What is operating system? Name some important operating systems.

An **operating system** is a set of programs that manages all computer components and operations. A computer cannot do anything without operating system. Operating system must be installed on every computer. Users interact with the computer through operating system.

When computer is turned on, the operating system runs and checks that all parts of the computer are functioning properly. It manages all operations on the computer after loading in the memory. The following figure shows that an operating system acts as an interface between the user and computer hardware.



Important Operating Systems

Some important operating systems are as follows:

- Microsoft Windows
- Unix
- Mac OS
- Linux
- Sun Solaris

Q. Discuss different functions of operating system.

Operating system performs the following functions:

1. Booting

Booting is a process of starting or restarting the computer. Operating system starts the computer to work. It checks the computer and makes it ready to work.

2. Memory Management

It is also an important function of operating system. The memory cannot be managed without an operating system. Different programs and data execute in memory at one time. If there is no operating system, the programs may mix with each other. The system will not work properly.

3. Loading and Execution

A program is loaded in the memory before it can be executed. Operating system provides the facility to load programs in memory easily and then execute it.

4. Data Security

Data is an important part of computer system. The operating system protects the data stored on the computer from illegal use, modification or deletion.

5. Disk Management

Operating system manages the disk space. It manages the stored files and folders in a proper way.

6. Process Management

CPU can perform one task at one time. If there are many tasks, operating system decides which task should get the CPU.

7. Device Controlling

Operating system controls all devices attached to computer. The hardware devices are controlled with the help of small software called **device drivers**.

8. Printing Controlling

Operating System also controls printing function. If a user issues two print commands at a time, it does not mix data of these files and prints them separately.

9. Providing Interface

User interface is used to interact with the computer. User Interface controls how you enter data and instructions and how information is displayed on the screen. Operating system provides two types of interfaces for the user:

- **Graphical User Interface:** It consists of visual environment to communicate with the computer. It uses windows, icons, menus and other graphical objects to issues commands.
- **Command-line Interface:** It provides an interface to communicate with the computer by typing commands.

Q. What are computer languages? Describe high-level and low-level languages.

A **programming language** is used to write computer programs. It is a means of communication between user and the computer. A large number of programming languages are available for writing programs. The programmer selects a programming language according to the nature of the program. There are two categories of computer programming languages. These are low-level languages and high-level languages.

Type of Programming Languages

There are two types of computer programming languages:

1. Low-level languages
2. High-level languages

1. Low Level Languages

Low-level languages are near to computer hardware and far from human languages. The two low-level languages are machine language and assembly language.

i. Machine Language

A type of language in which instructions are written in binary form is called **machine language**. It is the only language that is directly understood by the computer. It is the fundamental language of the computer.

ii. Assembly Language

Assembly language is a low-level language. It is one step higher than machine language. In assembly language, symbols are used instead of binary code. These symbols are called **mnemonics**. For example **Sub** instruction is used to subtract two numbers. Assembly language is also called **symbolic language.**

2. High Level Languages

A type of language that is close to human languages is called **high level language**. High-level languages are easy to understand. Instructions of these languages are written in English-like words such as **input** and **print** etc.

Examples

- BASIC
- FORTRAN
- COBOL
- C / C++
- Java
- Visual Basic

Q. Define source code and object code. What is difference between them?

Source Code

A program written in a high-level language is called **source code**. Source code is also called **source program**. Computer cannot understand the statements of high-level language. The source code cannot be executed by computer directly. It is converted into object code and then executed.

Object Code

A program in machine language is called **object code**. It is also called **object program** or **machine code**. Computer understands object code directly.

Difference between Source Code and Object Code

Source Code	Object Code
1. Source code is written in high-level or assembly language.	1. Object code is written in machine language through compilers.
2. Source code is easy to understand.	2. Object code is difficult to understand.
3. Source code is easy to modify.	3. Object code is difficult to modify.
4. Source code contains fewer statements than object code.	4. Object code contains more statements than source code.

Q. Describe language processors or translators and their use. Discuss different types of language processors.

Language Translator

Language translator is a program that translates a program of high level language or assembly language into machine code. Every computer language has its own translator. Computer understands only machine language. A program written in high-level or assembly language cannot be run on a computer directly. It must be converted into machine language before execution.

Types of Translators

Different types of translators or language processors are:

1. Compiler
2. Interpreter
3. Assembler

1. Compiler

A **compiler** is a program that converts the instruction of a high level language into machine language as a whole. A program written in high-level language is called **source program**. The compiler converts the source program into machine code. The machine code program is known as **object program**. The object program can executed many times.

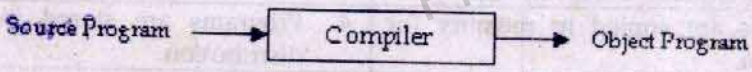


Figure: Working of compiler

The compiler checks each statement in the source program and generates machine instructions. Compiler also checks syntax errors in program. A source program containing an error cannot be compiled.

2. Interpreter

An **interpreter** is a program that converts one statement of a program into machine at one time. It executes this statement before translating the next statement of the source program. If there is an error in the statements, the interpreter stops working and displays an errors message.

The advantage of interpreters over compilers is that an error is found immediately. So the programmer can correct errors during program development. The disadvantage of interpreter is that it is not very efficient. The interpreter does not produce an object program. It must convert the program each time it is executed. Visual Basic uses interpreter.

3. Assembler

An **assembler** is translating program that translates the instruction of a assembly language into machine language.

Q. What is difference between compiler and interpreter?

The difference between compiler and interpreter is as follows:

Compiler	Interpreter
1. Compiler converts a program into machine code as a whole.	1. Interpreter converts a program into machine code statement by statement.
2. Compiler creates object code file.	2. Interpreter does not create object code file.
3. Compiler converts high-level program that can be executed many times.	3. Interpreter converts high-level program each time it is executed.
4. Program execution is fast.	4. Program execution is slow.
5. Compiler displays syntax errors after compiling the whole program.	5. Interpreter displays the syntax error on each statement of program.

Q. What is difference between memory and storage?

The difference between memory and storage is as follows:

Memory	Storage
1. Memory is volatile.	1. Storage is nonvolatile.
2. It is faster than storage.	2. It is slower than memory.
3. It is more expensive than storage.	3. It is less expensive than memory.
4. Programs are copied in memory for execution.	4. Programs are stored in storage for distribution.
5. The capacity of memory is less than storage.	5. The capacity of storage is much more than memory.

Short Questions

Q.1. Explain Von-Neumann computer model.

In 1951, a scientist Von Neumann and his team proposed a design of stored program computer. Program and data are stored in computer memory according to this design. The computer reads instructions one by one and executes them. It is the basis of most modern computer of today.

Q.2. Describe computer architecture.

A computer is a combination of various components. These components perform different functions. All components work together and communicate with one another. The way in which these components are connected with one another is called computer architecture.

Q.3. Which components are included in computer architecture?

Different components of computer architecture are control unit, ALU, main memory, I/O unit and bus interconnection.

Q.4. What is CPU?

CPU stands for central processing unit. It is the brain of the computer. It is the most important element of a computer system. CPU performs all operations on data according to the given instructions. It executes instructions and tells other parts of computer what to do.

Q.5. List out different units of CPU.

CPU consists of three units. These are CPU Memory (Registers), Arithmetic and Logic Unit (ALU) and Control Unit (CU).

Q.6. Write the function of arithmetic and logic unit (ALU)?

ALU is part of CPU where actual execution of the instructions takes place. All arithmetic and logical operations are performed in ALU.

Q.7. Which functions are performed by arithmetic unit of CPU?

Arithmetic unit of ALU performs the basic arithmetic functions. The basic arithmetic functions are addition, subtraction, multiplication and division.

Q.8. Which functions are performed by logic unit of CPU?

Logic unit of ALU performs the logical operations. A logical operation is usually a comparison of numbers, letters or special characters. A comparison operation is performed to make decision. A computer can take a specific action based on the result of a comparison.

Q.9. Distinguish between arithmetic operations and logical operations.

Arithmetic operations include addition, subtraction, multiplication, and division. Logical operations compare one element of information to another. It determines whether one item is greater than, less than or equal to the other.

Q.10. List out some activities of control unit.

Control Unit fetches instructions from main memory. It interprets that instruction to find what operation is to be performed. It controls the execution of instruction.

Q.11. The actual execution of instructions is performed in which CPU unit?

The actual execution of instructions is performed in the arithmetic logic unit (ALU).

Q.12. Define main memory.

Main memory is an important component of computer. It is used to store program and data that are being executed. It is also known as working area of a computer system.

Q.13. When referring to memory, what does volatile mean?

Volatile means that information stored is not stored permanently. It is lost when the power is turned off.

Q.14. Define memory address.

The main memory consists of memory cells. Each memory cell has a unique number. This number is called memory address.

Q.15. Why is RAM called Random Access Memory?

The main memory is called Random Access Memory because each memory cell of this memory can be accessed randomly i.e. without any sequence or order.

Q.16. Which must be loaded first in computer memory, the operating system or software applications? Why?

Operating system must be loaded first in computer memory. It is not possible to load application software before loading operating system. The software applications interact with the computer with the help of operating system.

Q.17. Why is RAM called volatile?

RAM is temporary memory. When the power is turned off, the information in this memory is lost. Thus it is called volatile memory.

Q.18. State the function of I/O Unit.

I/O unit controls the processor's communication with peripheral devices such as monitor and printer etc. Different registers are used to store the data coming in or going out. A peripheral device selection unit is used to determine the interface for sending data.

Q.19. Define bus interconnection.

A computer system consists of CPU, main memory and I/O units. These components have to be connected to transfer data from one component to another. The use of buses to connect different components is known as bus interconnection.

Q.20. What is SRAM?

SRAM stands for Static Random Access Memory. The memory cells are made from digital gates. Each cell can store data without any need of frequent recharging. SRAM is more expensive. It does not need to be power-refreshed.

Q.21. What is DRAM?

DRAM stands for Dynamic Random Access Memory. It is a type of memory that is used in most computers. It is the least expensive kind of RAM. DRAM requires an electric current to maintain its electrical state. DRAM is recharged or refreshed again and again to maintain its data. The processor cannot access the data of DRAM when it is being refreshed.

Q.22. Differentiate between SRAM and DRAM.

DRAM holds its data dynamically. It does not hold it indefinitely. Each DRAM memory cell must be constantly refreshed to keep data in DRAM. SRAM does not require refreshing. It holds the data indefinitely as long as the computer remains on. It is faster than DRAM but it is more complex.

Q.23. Why does DRAM use more power?

DRAM uses more power because it recharged and refereshed again and again to maintain its data.

Q.24. What is ROM?

ROM stands for read only memory. The instructions in ROM prepare the computer for use. These instructions can only be read but cannot be changed or deleted. It is not possible to write new information or instructions into the ROM.

Q.25. Differentiate between RAM and ROM.

RAM is a type of volatile memory. The contents in RAM are not stored permanently. ROM is nonvolatile memory. The contents of ROM can only be read and the new information cannot be written in it.

Q.26. Why is ROM known as non-volatile memory?

ROM stores data and instructions permanently. When the power is switched off, the instructions stored in ROM are not lost. Therefore ROM is called non-volatile memory

Q.27. Define PROM.

PROM stands for programmable read only memory. The user can write his own instructions once. If there is any error in writing the instructions, the error cannot be removed from the PROM.

Q.28. Define EPROM.

EPROM stands for Erasable Programmable Read Only Memory. User can erase instructions or data stored in EPROM chip by exposing the chip to ultraviolet light and write new program

Q.29. Define EEPROM.

It stands for Electronically Erasable Programmable Read Only Memory. The user can erase and write instructions with electrical pulses. Its contents can be erased electrically

Q.30. Describe cache memory.

A cache is a small and very fast memory. It is designed to speed up the transfer of data and instructions. It is faster than RAM. The data and instructions that are most recently or most frequently used by CPU are stored in cache.

Q.31. Distinguish between primary memory and cache memory.

Cache memory is a special form of high-speed memory. It eliminates the need to repeatedly move data to and from the CPU to memory. Primary memory is slower than cache and located outside of the CPU. It is also less expensive than cache.

Q.32. What are system buses?

System bus is used to connect the main components of a computer such as CPU and main memory. System buses are part of motherboard. Computers normally have system bus of 70 – 100 lines.

Q.33. List out different types of system buses?

There are three types of system buses. These are data bus, address bus and control bus.

Q.34. Explain data bus.

Data bus is the most common type of bus. It is used to transfer data between different components of computer. The number of lines in data bus affects the speed of data transfer between different components. The data bus consists of 8; 16, 32 or 64 lines.

Q.35. What is address bus?

Many components are connected to one another through buses. Each component is assigned a unique ID. This ID is called the address of that component. If a component wants to communicate with another component, it uses address bus to specify the address of that component.

Q.36. Describe the use of control bus.

Control bus is used to transmit different commands or control signals from one component to another component. Suppose CPU wants to read data from main memory. It will use control bus to send the **memory read** command to the main memory of computer.

Q.37. What is motherboard?

Motherboard is the most important circuit board in system unit. It contains different chips. Different devices are attached to motherboard directly or indirectly.

Q.38. List some important responsibilities of I/O unit.

The I/O unit is responsible for the following:

- It monitors the states of different devices attached to it.
- It manages the speed difference between the processor and I/O devices.

Q.39. How is data transferred from peripheral devices to computer?

Different peripheral devices are used to transfer data into the computer. The speed of these devices is much slower than processor. Two techniques for transferring data from peripheral devices to computer are interrupts and DMA.

Q.40. What are interrupts?

An interrupt is a signal. In this scheme, the processor issues a command to an I/O device for input or output operation. The device generates an interrupt signal to processor when it becomes ready. When CPU receives interrupt, it suspends all other processing and performs I/O operation.

Q.41. Define DMA.

DMA stands for Direct Memory Access. In this scheme, processor issues I/O command and then gets busy in some other processing. A special hardware receives data from I/O device. It uses system bus to store data in main memory directly without going through CPU.

Q.42. State the purpose of CPU registers.

Register is a small high-speed memory inside CPU. It is used to store data temporary. Data is stored in registers from main memory for execution. CPU contains a number of registers. Each register has a predefined function.

Q.43. List some general purpose registers.

- Accumulator Register
- Base Register
- Counter Register
- Data Register

Q.44. List names of address or segment registers.

- Code Segment
- Data Segment
- Extra Segment
- Stack Segment

Q.45. Define stack.

A stack is set of memory locations in which data is stored and retrieved in an order. This order is called Last-In-First-Out (LIFO). The data item stored at the top of stack is retrieved before retrieving the item below it.

Q.46. What is instruction set?

A set of all instructions that a CPU can perform is called instruction set. Different types of CPU can execute different instruction sets. Normally, a modern CPU can execute 80 to 120 instructions.

Q.47. List different types of operations performed by the computer.

The instruction set consists of the following types of instructions:

- Data Transfer Instructions
- Arithmetic and Logical Instructions
- I/O Instructions
- Control Transfer Instructions

Q.48. Write the purpose of data transfer instructions.

The instructions used to transfer data from one component to another component during program execution are called data transfer instructions. All CPUs provide different instructions to transfer data.

Q.49. What are arithmetic and logical instructions?

The instructions used to perform arithmetic operations are called arithmetic instructions. The instructions used to perform logical operations are called logical instructions.

Q.50. Write the purpose of I/O Instructions.

Every CPU provides the operations of reading data from peripheral devices and writing data to peripheral devices. These devices include keyboard, mouse and disks etc. A programmer can use I/O operations by issuing different input and output commands.

Q.51. Write the purpose of control transfer instructions.

The instructions used to change the sequence of instructions of a program are called control transfer instructions. These instructions transfer the execution control to a certain part of program instead of next instruction.

Q.52. What is instruction format?

An instruction is a statement that tells the computer to do something. The way an instruction is given is called instruction format.

Q.53. Name two parts of instruction format.

A simple instruction format may consist of the following:

- Operand code
- Address of the operand

Q.54. Define operand code and operand.

The operand code specifies the operation to be performed by the computer such as ADD, COMPARE etc. An operand can be a value or register number on which the operation is performed.

Q.55. Explain the Fetch-Decode-Execute cycle of CPU.

When a set of instructions is to be executed, the instructions and data are loaded in main memory. Then the address of the first instruction is copied into the program counter. The execution of an instruction by a processor is divided in three parts. These parts are Fetch, Decode, and Execute.

Q.56. What is fetch instruction?

In the first step, the processor fetches the instruction from the memory system. The instruction is transferred from memory to instruction register.

Q.57. Define port.

A port is an interface or point of attachment. It is used to connect peripheral devices with computer such as printers, keyboards or mouse

Q.58. State the use of serial port.

A serial port is used to connect devices to the system unit. A serial port transmits data one bit at a time. It is usually used to connect devices that do not require fast data transmission like mouse and keyboard etc.

Q.59. State the use of parallel port.

Parallel port is used to connect devices that transfer many bits at a time. Printers connect to computer using a parallel port.

Q.60. Distinguish between serial port and parallel port.

When using a serial port, the bits are sent and received sequentially one at a time over that data wire. A parallel port has multiple data wires and the bits are sent simultaneously. Even though a serial port is slow, it can transmit data faster than a human can type.

Q.61. What do you know about I/O devices?

Input/output devices are used for communication between the computer and the user. Input devices are used to get input from the user. Output devices are used to display output to the user.

Q.62. List out the steps performed by processor to execute statement?

The processor performs four steps to execute an instruction. These are instruction fetch, interpret instruction, data fetch and execute instruction.

Q.63. Define accumulator register.

Accumulator is a type of register located in CPU. It is used in mathematical and logical operations.

Q.64. List out different types of accumulator register?

There are four types of accumulative registers. These are EAX, EBX, ECX and EDX.

Q.65. Describe programming language.

A set of words and symbols used to write programs is called programming language. It is a means of communication between a user and the computer. These languages are used to develop computer software. Different programming languages are used to write different types of programs.

Q.66. Name two main categories of programming languages.

The two main categories of computer programming languages are low-level languages and high-level languages.

Q.67. Why does machine language program execute faster?

A program written in machine language can be executed very fast by computer. The computer does not need any translator to understand this language.

Q.68. Give some examples of high-level languages.

Some high-level languages are C/C++, Java, Pascal, FORTRAN, BASIC, COBOL.

Q.69. Distinguish between low-level and high-level languages.

High-level languages are easy and low-level languages are difficult. Low-level languages provide more hardware support than high-level languages. The programs written in low-level languages are faster in execution. High level languages provide machine independence.

Q.70. Differentiate between source code and object code.

Source code is easy to understand and modify. Object code is difficult to understand and modify. Source code contains fewer statements than object code.

Q.71. Which task is performed by language processor?

Language processor or translator is a type of software that converts high-level programs into machine language.

Q.72. List out different types of language processors?

Different types of language processors are compilers, interpreters and assemblers.

Q.73. What is a compiler?

A compiler is a program that converts the instruction of a high level language into machine language as a whole. The compiler converts the source program into machine code. The machine code program is known as object program.

Q.74. How does a compiler work?

The compiler checks each statement in the source program and generates machine instructions. Compiler also checks syntax errors in program. A source program containing an error cannot be compiled.

Q.75. Explain the working of interpreter.

An interpreter is a program that converts one statement of a program into machine at one time. It executes this statement before translating the next statement of the source

program. If there is an error in the statements, the interpreter stops working and displays an errors message.

Q.76. Define assembler.

An assembler is translating program that translates the instruction of an assembly language into machine language.

Q.77. Compare compiler and interpreter.

The main difference between compiler and interpreter is that compiler converts a program into machine code as a whole and interpreter converts a program into machine code statement by statement.

Q.78. State the relationship of object program, source program and compiler.

A source program is written by a programmer that cannot be understood by computer directly. Compiler translates it into object program for computer to understand and execute.

Q.79. List some important functions of operating system.

Some important functions of operating system include booting, memory management, process management, data security, providing interface to users and command prompt.

Q.80. Describe assembly language.

Assembly language is a low-level language. It is one step higher than machine language. In assembly language, symbols are used instead of binary code. These symbols are called mnemonics.

Q.81. Write the names of popular operating systems.

Some popular operating systems are Windows, Linux, Unix, DOS and Sun Solaris.

Q.82. State the purpose of fetch instruction.

The processor uses fetch instructioni to fetche the instruction from the memory system. The instruction is transferred from memory to instruction register.

Q.83. State the purpose of decode instruction.

Decode instruction is used bye the processor to decode the instruction. The processor gets any operand if required by the instruction.

Q.84. State the purpose of execute instruction.

It is the last phase of fetch-decode-execute cycle. The processor executes the instruction in this phase.

Q.85. Describe the role of main memory in computer system?

Main memory is an important component of computer system. It is used to store program and data that are being used by the processor. It is also known as **working area** of computer system. A computer cannot work without main memory.

Q.86. What is the concept of stored program machine?

The concept of stored program machine means that program and data are stored in computer memory. The computer reads instructions one by one and executes them. It is very simple concept. It is the basis of the modern computer. It was introduced by Von Neumann.

Multiple Choice

1. **The process of storing the programs and data in memory is called:**

a. CPU b. Fixed disk c. Data processing d. Stored-program concept

2. **The idea of storing a program in memory was suggested by:**
   a. John von Neumann and his team b. Dr. Qadir and his team
   c. Dr. Abdul Salam and his team d. Pascal
3. **Which component handles the processor communication with its peripheral?**
   a. Control Unit b. I/O Unit c. Bus interconnection d. None
4. **Which component is used to connect different parts of computer together?**
   a. Bus Interconnection b. Control Unit c. Main memory d. None
5. **The "brain" of the computer that executes the instructions is called:**
   a. CPU b. RAM c. Motherboard d. System unit
6. **The central processing unit:**
   a. Interprets and executes instructions
   b. Communicates with other parts of the computer system
   c. Does arithmetic and logic operations
   d. All of the above
7. **CPU includes all of the following components EXCEPT:**
   a. Primary storage b. ALU c. Control Unit d. Register
8. **The circuit board on which the processor and other chips are placed is called:**
   a. Big board b. Motherboard c. Master circuit d. Connector circuit
9. **CPU consists of the following parts:**
   a. CU and Main Memory b. Control Unit and ALU
   c. Main Memory and storage d. Operating system and application
10. **The arithmetic/logic unit performs the following actions:**
    a. Control computer operations b. Perform arithmetic functions
    c. Perform logical comparisons d. Both b and c
11. **Which component of CPU is responsible for deciding which operations are to be performed by the CPU?**
    a. ALU b. Control unit c. Register d. None
12. **Which component of CPU is responsible for comparing the contents of two pieces of data?**
    a. ALU b. Control Unit c. Memory d. None
13. **The arithmetic / logic unit can perform:**
    a. Addition b. Subtraction c. Multiplication d. All
14. **The ALU performs arithmetic and ____ operations.**
    a. Logical b. logging c. Loading d. None
15. **Which component of CPU is responsible for interacting with primary memory?**
    a. ALU b. Control unit c. BUS d. None
16. **Memory space in a computer is used to:**
    a. Hold application programs.
    c. Hold data and information temporarily.
    d. Provide additional space as needed for programs or data.
    d. All of the above.
17. **An identifiable location in memory where data are kept is called a(n):**
    a. Space. b. Address c. Location d. Cell

18. **The RAM stands for:**
a. Readily available memory b. Read and more memory
c. Random access memory d. Remember all memory

19. **RAM holds the data/instructions:**
a. Temporary b. Permanent c. HDD d. None of these

20. **An important characteristic of RAM is that it is:**
a. Read only b. Writes only c. Nonvolatile d. Volatile

21. **The ROM stands for:**
a. Recursive online memory b. Rapid online memory
c. Random only memory d. Read only Memory

22. **A characteristic of ROM is that it is:**
a. Read only b. Volatile c. Nonvolatile d. Both a and c

23. **The difference between ROM and RAM is:**
a. ROM is larger b. ROM is nonvolatile c. ROM is read only d. Both b & c

24. **Which one is faster:**
a. RAM b. Cache c. Register d. Hard Disk

25. **Which memory is used to speed up the computer processing?**
a. ROM b. Memory cache c. BIOS d. None

26. **Memory is made up of:**
a. Set of wires b. Set of circuits c. Cells d. None

27. **Which is not a type of memory?**
a. DRAM b. SRAM c. ROM d. FRAM

28. **The cell of memory are logically organized into group of :**
a. 8 bits b. 5bits c. 12 bits d. None

29. **The operation of arithmetic logic unit is directed by:**
a. ALU itself b. Program c. Control unit d. Memory Unit

30. **Which of the following is NOT a type of RAM?**
a. Quick RAM b. Dynamic RAM c. Stable RAM d. Both a and c

31. **Chips retain their contents indefinitely without constant electronic refreshment:**
a. Dynamic RAM b. Dynamic ROM c. Static RAM d. Static ROM

32. **Which of the following is most likely used for static RAM technology?**
a. Primary memory b. Secondary storage c. Cache memory d. CPU registers

33. **Which one is not a type of ROM:**
a. PROM b. EPROM c. EEPROM d. FPROM

34. **EEPROM chips:**
a. Can be reprogrammed by ultraviolet light b. Can be reprogrammed electronically
c. Cannot be reprogrammed. d. Both a and b

35. **The step that translates instruction into individual commands that the computer can process is called:**
a. Fetch b. Translate c. Decode d. Execute

36. **The step that obtains the next instruction from memory is called:**
a. Read b. Fetch c. get d. Decode

37. **The step that performs the actions given in the instructions is called:**
a. Fetch b. Calculate c. Decode d. Execute

38. **Temporary storage area within CPU is called:**
a. Registers b. ROMs c RAM d. None

39. **Which of the following is NOT a type of register?**
a. Address registers b. Accumulators
c. General-purpose registers d. All are types of registers

40. **Registers that collect the results of computation are called:**
a. Instruction pointer b. Storage c. Storage registers d. Accumulator

41. **There are_____ type of accumulative register:**
a. Two b. Three c. Four d. None of these

42. **The order of stack is:**
a. FIFO b. LIFO c GIGO d. FIGO

43. **The size of the accumulator register can be up to:**
a. 4 bit b. 4 KB c. 4 bytes d. 4 MB

44. **The size of DI, SI, SP and BP stack control register is:**
a. 2 bytes each b. 6 bytes each c. 4 bytes each d. 8 bytes each

45. **Which is not a kind of register?**
a. Flag b. Segment c. Accumulator d. Math coprocessor

46. **A set of electrical paths used to transfer data is called:**
a. Bus b. Monitors c. Computer clock d. None

47. **A bus line consists of:**
a. Registers b. Accumulators c. Set of parallel lines d. Computer clock

48. **This type of bus connects the CPU to memory on the system board.**
a. System bus b. Word bus c. Expansion bus d. Width bus

49. **_____ allow the processor to communicate with peripheral devices.**
a. Expansion bus b. System bus c. Memory bus d. Processor bus

50. **Which of the following is not a type of bus in computer?**
a. Data bus b. Address bus c. Timer bus d. Control bus

51. **A bus that moves data between the central processor and memory is known as:**
a. I/O bus b. CPU bus c. Processor bus d. Data bus

52. **A bus with 64 lines can carry_____ of data:**
a. 32-bits b. 64-bits c. 16-bits d. 64-bytes

53. **CPU provides enabling signal through:**
a. Control Bus b. Data Bus c. Address Bus d. Ordinary Bus

54. **All of the following may be stored in registers EXCEPT:**
a. Program instructions b. Memory addresses c. Data d. CPU instruction set

55. **Expansion slots connect interface cards to:**
a. Ports. b. Peripheral devices. c. Motherboard. d. System bus.

56. **A port on the computer may be connected to:**
a. Expansion card b. CPU c. Motherboard d. Both a and c

57. **Expansion cards are inserted into:**
a. Slots b. Peripheral devices c. CPU d. Back of the computer

58. **The external devices that are connected to a computer system are known as:**
a. Expansion cards b. Peripherals c. Buses d. Slots

59. **Checking a computer program for errors is called _____:**
    a. Correcting b. Running c. Bugging d. Debugging
60. **The output of the compiler is called:**
    a. The program b. Source code c. Linked code d. Object code
61. **A program's syntax errors are detected by:**
    a. Compiler. b. Linker. c. Loader. d. Debugger.
62. **The program that contains instructions to operate a device is called:**
    a. Device Driver b. Device operator c. Device linking d. Device System
63. **Computers derive its basic strength from:**
    a. Speed b. Memory c. Accuracy d. All
64. **The address of instruction under the processor execution is contained within:**
    a. Program Counter b. Current Instruction Register
    c. Memory Address Register d. Memory Buffer Register
65. **What is the main purpose of secondary storage devices?**
    a. Calculating data b. Temporary storage of data
    c. Permanent storage of data d. Output of information
66. **The term that refers to all input, output, and secondary storage devices is:**
    a. Peripheral b. Central c. Attached d. Network
67. **Which of the following is not considered to be a peripheral device?**
    a. Disk drive b. Keyboard c. Monitor d. CPU
68. **When CPU executes an instruction, which of the following happens first?**
    a. Instruction fetch b. Decode instruction c. Execute instruction d. All
69. **BIOS stand for:**
    a. Binary input/output system b. Basic Input/output system
    c. Boolean input/output system d. None
70. **CU stands for:**
    a. Control Unit b. Cache Unit c. Calculating Unit d. Communication Unit
71. **Usually RAM has types:**
    a. 2 b. 3 c. 4 d. 5
72. **Which type of memory is nonvolatile and cannot be changed by the user?**
    a. SRAM b. DRAM c. ROM d. None
73. **ALU has_____ units:**
    a. 2 b. 3 c. 4 d. 5
74. **How many types of language translator have?**
    a. 1 b. 2 c. 3 d. 4
75. **Types of translators are:**
    a. Compilers b. Interpreters c. Assemblers d. All
76. **Which of the following memories needs refresh?**
    a. SRAM b. DRAM c. ROM d. All
77. **Which computer memory is used for storing programs and data currently being processed by the CPU?**
    a. Mass memory b. RAM c. Non-volatile memory d. PROM

78. **Which of the following registers is used to keep track of address of the memory location where the next instruction is located?**
    a. Memory address register b. Memory data register
    c. Instruction register d. Program counter
79. **Which of the following memories allows simultaneous read and write operations?**
    a. ROM b. RAM c. EPROM d. None
80. **EEPROM stand for:**
    a. Electrically Erasable Programmable Read Only Memory
    b. Easily Erasable Programmable Read Only Memory
    c. Electronically Erasable Programmable Read Only Memory
    d. None of the above
81. **Computer cannot boot if it does not have:**
    a. Compiler b. Linker c. Interpreter d. Operating System
82. **The address bus is:**
    a. Bidirectional b. Unidirectional c. Multidirectional d. Circular
83. **If memory location is to be read, CPU places address in:**
    a. MAR b. MBR c. PC d. None
84. **A translator is best described as:**
    a. Application software b. System software c. Hardware d. None

Answers

1. d	2. a	3. b	4. a	5. a	6. d
7. a	8. b	9. b	10. d	11. b	12. a
13. d	14. a	15. b	16. d	17. b	18. c
19. a	20. d	21. d	22. d	23. d	24. c
25. b	26. c	27. d	28. a	29. c	30. d
31. c	32. c	33. d	34. b	35. c	36. b
37. d	38. a	39. d	40. d	41. c	42. b
43. c	44. a	45. d	46. a	47. c	48. a
49. a	50. c	51. d	52. b	53. a	54. d
55. c	56. d	57. a	58. b	59. d	60. d
61. a	62. a	63. d	64. a	65. c	66. a
67. d	68. a	69. b	70. a	71. a	72. c
73. a	74. c	75. d	76. b	77. b	78. d
79. b	80. c	81. d	82. b	83. a	84. b

Fill in the Blanks

1. DMA stands for_____.
2. In _____ mode, data can be transmitted in both directions simultaneously.
3. The lexical analyzer is also commonly known as_____.
4. The _____ reads the instructions from the memory and decodes these instructions.

5. The_____ interface consists of Window, Menus, Icons and pointers.
6. EEPROM stands for_____.
7. Stack pointer register is used for _____.
8. DRAMs require _____ refreshing to main data storage.
9. _____ language was developed for business applications.
10. _____ register is used in mathematical or logical operations.
11. DVD stands for_____.
12. BIOS stands for_____.
13. Initial work on the Internet was done in_____ operating system.
14. The instructions that are used to transfer data from one unit to another during program execution are called_____.
15. A_____ port transmit multiple bits at a time.

Answers

1.	Direct Memory Access			2.	Full duplex
3.	scanner or tokenizer	4.	Control unit	5.	Graphical user
6.	Electrically Erasable Programmable Read Only memory				
7.	Maintaining stacks			8.	Periodic
9.	COBOL	10.	General purpose	11.	Digital Video Disk
12.	Basic Input/Output System			13.	Unix
14.	Read/Write instructions			15.	Parallel

True / False

1. BPS stands for Byte per Second.
2. In Simplex Transmission mode transmission can take place in both the directions.
3. Random Access Memory is volatile memory.
4. Operating System is an application program.
5. External buses and internal buses are similar.
6. Accumulator register is sued to control the stacks in the computer.
7. LIFO stands for Last-In-First-Out.
8. Expansion slot is a place where an expression card Is fitted.
9. Static Ram holds the data as long as power is supplied to it.
10. The clock of computer ticks once in one second just like an ordinary clock.
11. VDU is an input device.

Answers

1. T	2. F	3. T	4. F
5. F	6. F	7. F	8. F
9. F	10. F	11. F	

Chapter 6

Security, Copyright and the Law

Q. Define security. How is security maintained on a computer?

Security is a system that is used to protect a computer system and data. It protects from intentional or accidental damage or access by unauthorized persons.

A computer can detect whether the user is authorized or not. Different techniques are used for this purpose:

- **What you have:** The user may have a key, badge, token or plastic card to get physical access to the server room or computer building.
- **What you know:** The user may have to enter user ID and password or special number to logon the machine.
- **What you do:** The user may enter **signatures** on the documents to confirm that they are authorized user.
- **What you are:** The user may be checked through **biometrics**. It is a means of biological identification such as fingerprints, voice recognition, eye retina etc.

Q. What is a computer virus? How can it damage computer?

A computer virus is program that may disturb the normal working of a computer system. Virus attaches itself to files stored on floppy disks, email attachments and hard disks. A file containing a virus is called **infected file**. If this file is copied to a computer, virus is also copied to the computer.

Computer virus cannot damage computer hardware. It may cause many damages to a computer system. A virus can:

1. A computer virus can damage data or software on the computer.
2. It can delete some or all files on the computer system.
3. It can destroy all data by formatting hard drive.
4. It may display a political or false message every few times.

Q. Explain different causes of computer virus OR How does virus spread? How virus is activated?

A virus is spread on different computers due to the following reasons:

1. Email

Virus can spread if the user opens and downloads an email containing a virus. Most of the viruses are spread through email messages.

2. Networks

Virus can spread if the user connects with a computer network that contains virus. Internet is an example of such network. When a user downloads a file infected with virus from Internet, the virus is copied to computer. It may infect the files stored on the computer.

3. Removable Storage Media

Floppy disks, CDs and flash devices are important means of exchanging data. A virus can also be transferred with the files when a user copies data from one computer to another using these devices.

4. Pirated Software

The illegal copy of software is called **pirated software**. Virus can spread if the user installs pirated software that contains virus. A variety of pirated software is available in CDs and from Internet. Some companies intentionally adds virus in the software. The virus is automatically activated if the user uses the software without purchasing license.

Activation of Virus

When the computer virus starts working, it is called the **activation** of virus. A virus normally runs all the time in the computer. Different viruses are activated in different ways. Many viruses are activated on a certain date. For example, a popular virus Friday the 13th virus is activated only if the date is 13 and day is Friday.

Q. How can we protect the computer system from a virus?

Virus infects computer system if Antivirus software is not installed. Latest Antivirus software should be installed on computer to protect it from viruses. A computer system can be protected from viruses by following these precautions:

1. The latest anti-virus should be installed on computer.
2. The Antivirus software must be upgraded regularly.
3. The floppy disk should be scanned for viruses before use.
4. Junk or unknown emails should not be opened.
5. Unauthorized or pirated software should not be installed on computer.
6. An important way of protection against virus is the use of backup of data. The backup is used if the virus deletes data or modifies it.
7. Freeware and shareware software from the Internet normally contain viruses. It is important to check the software before using them.

Q. Discuss different types of viruses.

Following are some important types of viruses:

1. Boot Sector Virus

A disk is divided into tracks and sectors. The disk that contains operating system has a special program in its first sector. The sector is known as **boot sector**. The program in boot sector is automatically loaded in memory when computer starts. The program then loads operating system in the memory.

The boot sector virus modifies the program in the boot sector. It is loaded into memory whenever computer is turned on. The virus is attached with the executable files like .exe, .com and .dll files. When the user uses these files, the virus attached with these files is activated. It infects other files and performs destructive commands and destroys data files.

2. Chernobal Virus

The famous chernobal virus deletes all Microsoft Office files. It also deletes the partition information from the disk that causes a major loss of data.

3. Logic Bomb

Logic bomb is also called time bomb. It differs from other viruses. It is activated at a certain date and time. **Michelangelo** is an important logic bomb. It destroys data on the hard disk on March 06.

4. Trojan Horse

Trojan Horse hides itself as useful program. It contains hidden instructions to erase data or cause other damage. It executes illegal, destructive instructions in the middle of a program such as computer game. **FormatC** is an example of a Trojan Horse.

5. Redlof

Redlof is a polymorphic virus. It is written in **Visual Basic Script**. It relies on the **Microsoft ActiveX Component** to execute itself. It locates **Folders.htt** and infects that file. Folder.htt is part of Microsoft Windows Active Desktop feature.

Some viruses make unnoticeable changes. They corrupt data being used. Some viruses may make data unusable.

A virus may detect some special information like passwords or sensitive data. It may send the data to some other user on a network. For example a virus may read the pin code or credit card number and then send it to another user. A virus may also make some resources unavailable to the users. For example, a virus may start sending data on a network. The network may become unavailable for the users.

Q. Explain antivirus software with examples. Write some benefits of using antivirus software.

A type of software that is used to detect and remove viruses is called antivirus software. Antivirus programs contain information about different known viruses. They can detect viruses and remove them.

Many Antivirus programs are available in the market. But no single software can detect and remove all viruses. Many new viruses are invented and spread through Internet continuously. Antivirus programs are also upgraded continuously to detect these new viruses. Antivirus program not only detects viruses from computer but also prevent new viruses from entering into the computer. Some important Antivirus programs are as follows:

- McAfee
- Norton Antivirus
- Doctor Solmon's

McAfee and Norton are two most commonly used Antivirus programs in Windows operating system.

Benefits

Some important benefits of using antivirus programs are as follows:

- Antivirus program protects important data from virus.
- It checks all files before they enter computer system.
- It alerts the user about the virus before it causes any damage to computer.
- It quarantines or eliminates a virus so that it may not harm computer.

Q. What is data security? Why is it important?

The protection of data is called **data security**. Data stored in any computer can be lost due to different reasons. The data can be lost accidentally. Someone can damage the data. Data can be lost completely or partially. The data is much valuable and important than the computer itself. It should be saved in such a way that it may not be lost or damaged.

Some organizations obtain data from the users and store data online to provide fast services. Some examples are as follows:

- A credit card company may store data of its customers online.
- A bank may provide online services using online data storage for the records.
- A university may provide the facility of online results.

The organization obtaining the data is responsible for the security of data. The user can prosecute against the organization if there is any problem in data security.

Importance of Data Security

Data security is very important to run some organizations successfully. A person may enter the network of an organization and gain unauthorized access to the data. For example, he may use the credit card number of another user for shopping. If the unauthorized person deletes important data, the business of the organization may be damaged severely. So it is very important to protect data from illegal and unauthorized access.

Q. Discuss some ways in which the security of data may be violated.

Following are some of the ways in which the security of data may be violated.

- Someone may break into the computer room. He may take away all storage devices that contain important and sensitive data.
- An unauthorized user may take access to the personal data. He may use it to gain some advantage. For example, someone may get access to the credit card of some other person. He can use it for online shopping from his account.
- An unauthorized user may use an online mail server like mail.yahoo.com. He may view the email messages of other users. It may cause privacy issues.
- Someone can send a virus onto a network. The virus may slow down the network or even make it unusable.
- Some users may gain unauthorized access to bank accounts. They can transfer a large amount of money from other accounts to his account.
- A person may make a computer so busy by sending many requests. The computer may become unavailable to authorized users. It is called **denial of service** situation.

Q. Briefly discuss different security threats to data security. What are the solutions to these threats?

Security Threats

Data is an important and valuable asset of any organization. It is more important than hardware. There are different threats to data security. The data can be damaged in two ways:

1. Intentional Threats

A user can intentionally delete important data. The intentional threats may occur for the following reasons:

- A hacker can delete data on a computer
- An angry employee of the organization can delete the data

2. Unintentional Threats

The unintentional threats to data security are as follows:

- An authorized user of data may delete or change the sensitive data accidentally.
- A technical failure of the hardware may damage the data
- A sudden power failure may also cause data loss

Solutions to Data Threats

The data can be protected using different methods. Some important ways to minimize security threats are as follows:

1. User Rights

The users must be assigned proper rights to minimize security threats. Every authorized user should not be allowed to change or delete data. The users with certain rights may be allowed to delete or modify data after following a step-by-step process.

2. Periodic Backup

Periodic backup of data should be taken regularly. The backup can be used to meet the situation if some occurs.

3. Passwords

Another solution to these problems is the use of proper password. Passwords must be entered to use any resource. A log file should also be maintained to keep track of all the activities on data and files. Authorized users should change their passwords periodically. Very short and common words should not be used as passwords.

4. Encryption

Some strong encryption algorithm should be used. Encryption is a process of encoding data so that only authorized user may understand and use it. If an unauthorized person gets access to the data, he should not be able to understand it.

5. Scanning

The data provided to organization must be scanned before use. Proper virus scanning software should be used to scan all data. The software can detect the infected data and indicate message to the user.

6. Lock

Computers and all backing storage devices should be placed in locked rooms. Only authorized users should be allowed to access these resources.

Q. What do you mean by data protection?

Data protection is a process of hiding personal data from unauthorized persons. It means that the data belonging to a person or organization should be hidden from other persons or organizations. The unauthorized person should not be allowed to access or use that data without the permission of that person whom it belongs. The protected data on a computer should not be used or viewed by any person.

Many organizations collect data of their employees and customers. The data may be required for processing the business transaction efficiently. For example, a hospital may collect data about the disease history of patients.

The personal data collected by different organizations may only be disclosed for some legal purpose. For example, the hospital may provide the data to medical researchers who may use the patient personal data to draw some conclusions.

The hospital management cannot distribute personal data anywhere else as it may disturb the patient. A patient will not allow to distribute his personal data specially if he has some mental disorder or a bad history.

The data protection rules do not allow any organization to misuse personal data of any person. It means that any personal data collected by some organization should never be disclosed to unauthorized persons or organization under any circumstances.

Q. What is privacy issue? Which points should be considered to ensure the privacy of an individual?

Privacy issue means that an individual has the right to see the data collected about him. He also has right to submit an application to view that data at any time.

He also has the right to stop the processing of his data by an organization. He is allowed to claim compensation from an organization for any kind of disclosure of data disallowed by the law. No worker of an organization is allowed to disclose or use data collected by his organization. Using data of his organization without permission is a crime.

The **data protection act** minimizes the misuse of personal information to provide a protection against such crime. An organization must only collect the data that is very necessary for its working. It should not collect unnecessary data.

Ensuring Privacy

The following points should be considered to ensure the individual privacy:

- The organization is responsible for keeping the data updated.
- The organization should keep data for the specified period of time only. It cannot keep it longer than necessary time period.
- The right of subject cannot be violated at any point during data processing.
- The organization is responsible for all kinds of security of data.

Q. What is the purpose of data protection legislation? What are the principles of data protection act?

The data protection defines the laws that ensure data protection. Many countries have defined the data protection legislation. Many advanced western countries enforce this law properly. The data protection legislation of different countries is based on same basic principles.

Principles of Data Protection Act

The principles of data protection act are as follows

- The purpose of keeping personal data must be clearly defined by that organization that obtains the data.
- The individual about whom data is collected must be informed about the identity of the organization or individual that collects data.

Q. Briefly explain some important privacy acts.

Some important privacy acts are as follows:

1980 Privacy Act

The **1980 Privacy Act** prohibits agents of federal government from making unannounced searches of press office.

1984 Cable Communication Policy Act

The **1984 Cable Communications Policy Act** restricts cable companies in the collection and sharing of information about their customers. It was the first legislation to regulate the use of information processed on computer.

Data Protection Act 1984 / Eight Data Protection Principles

Data Protection Act 1984 protects an individual from unauthorized use and disclosure of personal information stored on computer. It consists of the following eight principles:

1. The information in personal data shall be obtained and processed fairly and lawfully.
2. Personal data shall be held only for the specified and lawful purposes.
3. Personal data shall not be used or disclosed for unspecified purpose.
4. Personal data shall be adequate and relevant to the specified purpose. It should not be excessive in relation to that purpose.
5. Personal data shall be accurate and must be kept up to date.
6. Personal data shall not be kept for longer than is necessary for the specified purpose or purposes.
7. An individual shall have the right to be informed about his personal data without undue delay. He shall also be entitled to access, correct or erase data.
8. Appropriate security measures shall be taken against unauthorized access, or alteration, disclosure, accidental loss, or destruction of personal data.

1987 Computer Security Act

The **1987 Computer Security Act** makes actions that affect the computer security files and telecommunication illegal.

1988 Video Privacy Protection Act

1988 Video Privacy Protection Act prevents the disclosure of a person's video rental records without a court order.

Matching Privacy Protection Act of 1988

Matching and Privacy protection Act of 1988 prevents the government from comparing certain records to find a match.

Computer Misuse Act 1990

The **Computer Misuse Act 1990** makes provision to secure computer material against unauthorized access or modification. It was passed to deal the problem of **hacking** seriously. The legislation recognized three key offences.

- Unauthorized access to computer material
- Unauthorized access to commit or facilitate offences
- Unauthorized modification of computer material

1998 Data Protection Act

The **1998 Data Protection Act** came into force early in 1999. It is much broader in scope than the 1984 act. It applies to the following:

- Computerized personal data
- Persona data held in structured manuals files

It applies to anything done to the personal data. It may include collection, use, disclosure, and destruction or simply holding the personal data.

Q. Briefly discuss the copyright act.

Copyright Act 1976 is a principal law that governs software piracy. Some amendments were made in this act in 1983. **Software piracy** is now a punishable crime. The punishment may involve huge amounts of penalties. Software is an intellectual property of the person who develops it. He has the right to sell it in market. Software piracy deprives the developer from this right. Copyright act is used to punish the persons involved in software piracy.

Q. List some reasons of data loss.

Different reasons of data loss are as follows:

1. Sabotage

Damaging data deliberately is called sabotage. Any person may deliberately damage or delete the data stored on the computer.

2. Machine Failure

The data stored on a computer may be lost due to failure of hardware. For example if the hard disk is damaged, the data stored on that hard disk will be lost.

3. Software Error

Data can also be lost due to some technical defect or failure of some software running on the computer.

4. Human Error

An inexperienced person can delete data accidentally.

5. Power Failure

Sudden break down of power or fluctuation in power may result in data loss.

Q. What is password? What is its purpose? Give some examples of passwords.

Password is a secret word that is used to protect a computer system or program. It may consist of numbers, alphabets or both. The user has to type the password to access the computer system.

Purpose of Password

The purpose of password is to protect data stored on a computer. It protects data from being lost, misused or deleted by any person. The system can be accessed by a person who knows the password. Password can be changed only by authorized person.

An unauthorized person cannot access a computer system or program that is protected by a password. So the computer and the data stored on it will be safe and protected.

Examples of Passwords

1. Every computer provides an option for setting password. If the computer is protected with password, it will ask for that password to login.
2. Email facility on the Internet is also protected with password. Every user has to give email ID and password to check emails.
3. Internet Service Providers provide user accounts with passwords. The user ID and password is used to connect to the Internet.

Q. What is backup of data? What is purpose of backup?

An additional copy of data or information stored on secondary storage media is called the backup of data. The common media for backup are zip disk, magnetic tap, floppy disk, CD-ROM and hard disk etc.

The computer system can be damaged due to many reasons. The data stored on the system may also be lost, deleted or altered. Sometimes the data is very important and it cannot be created again. For example, computer in a bank may contain the records of all money transactions. The backup of data is used if your system crashes accidentally and the data stored in it is lost.

Purpose of Backup

The purposes of taking backup of data are as follows:

1. An important file can be deleted accidentally.
2. The user may overwrite a part or whole of an existing file.
3. A mechanical failure in computer may result in loss of data.
4. A virus may damage the data stored on the computer.
5. Computer system may be stolen by anybody.
6. Computer system may be damaged due to fire or power failure.

It is very important to take the backup of data regularly. It should be stored at a safe and protected place. In big organization, the backup is normally stored on a centralized networked computer. In small organization, the backup is stored on floppy disks, Zip disks or CD-ROM.

Q. Discuss different types of backup.

There are two ways to take the backup of data. These are complete backup and incremental backup.

1. Complete Backup

Backup of all data on the hard disk is called complete backup. The advantage of this backup is that the entire hard disk is backed-up. The data can be restored from this backup in case of a problem in system. It takes more time and storage capacity because the entire data of hard disk is copied.

2. Incremental Backup

Incremental backup creates a copy of only the data that is newly created or modified since the last backup. This process is performed automatically in some software. In this type of backup, the entire disk is not copied. It takes less time and space than complete backup.

Q. Discuss different media used for data backup.

Different types of media can be used for backup of data. The selection of media depends upon the nature and quantity of the data to be backed up.

1. Floppy Disks

Floppy disks are used for taking backup of small quantities of data. This media is not very much reliable. Floppy disks are damaged in hot, humid and dusty conditions. It can store only 1.4 mega bytes of data. The size of data can be decreased by using compression software like WinZip.

2. Zip Disk

Zip disk is similar to floppy disk. It is more reliable media. The storage capacity of a zip disk is normally 100 MB, 250 MB or 1000 MB. These are available with Parallel Port Interface or Universal Port (USB) interface.

3. Magnetic Tape

Magnetic tape is the most conventional and reliable media for backup. These are used for backing up several thousand million bytes of data. It is more expensive media. The data stored on this media cannot be accessed randomly.

4. CD

CD is also an important and commonly used media for backup. This media is reliable and cheap. Data on some types of CD can be written again and again.

Short Questions

Q.1. Define security.

Security is a system that is used to protect a computer system and data. It protects from intentional or accidental damage or access by unauthorized persons.

Q.2. How is security maintained on a computer?

- User may have key, badge, token or plastic card to get access to server room.
- User may have to enter user ID and password or special number to logon.
- User may enter signatures on the documents.
- User may be checked though biometrics such as fingerprints, voice recognition.

Q.3. Write about biometrics.

Biometrics is the use of voice prints, fingerprints, retinal scans, facial feature scans or other measurements of individual body characteristics.

Q.4. Give two biometric methods to prove the identity of a user to log on a system.

Two biometric methods to prove the identity of a user to log on a system can be finger print and human face recognition.

Q.5. Give two non-biometric methods to prove the identity of a user to log on a system.

Two non-biometric methods to prove the identity of a user to log on a system can be magnetic card and username.

Q.6. Define computer virus.

A computer virus is program that may disturb the normal working of a computer system. Virus attaches itself to files stored on floppy disks, email attachments and hard disks.

Q.7. How can virus damage computer?

- A computer virus can damage data or software on the computer.
- It can delete some or all files on the computer system.
- It can destroy all data by formatting hard drive.
- It may display a political or false message every few times.

Q.8. How virus is activated?

When the computer virus starts working, it is called the activation of virus. A virus normally runs all the time in the computer. Many viruses are activates on a certain date. A popular virus Friday the 13th virus is activates only if the date is 13 and day is Friday.

Q.9. Name different types of viruses.

- Boot sector virus
- Chernobal virus
- Logic bomb
- Trojan Horse
- Redlof

Q.10. How does boot sector virus work?

The boot sector virus modifies the program in the boot sector. It is loaded into memory whenever computer is turned on. The virus is attached with the executable files like .exe, .com and .dll files.

Q.11. Which type of damage is caused by Chernobal virus?

The famous chernobal virus deletes all Microsoft Office files. It also deletes the partition information from the disk that causes a major loss of data.

Q.12. What is logic bomb?

Logic bomb is also called time bomb. It differs from other viruses. It is activated at a certain date and time. Michelangelo is an important logic bomb. It destroys data on the hard disk on March 06.

Q.13. Describe Trojan horse.

Trojan Horse disguises itself as useful program. It contains hidden instructions and may erase data or cause other damage. It executes illegal, destructive instructions in the middle of a legitimate program such as computer game.

Q.14. What is Redlof?

Redlof is a polymorphic virus. It is written in Visual Basic Script. It relies on the Microsoft ActiveX Component to execute itself. It locates Folders.htt and infects that file. The Folder.htt is part of Microsoft Windows Active Desktop feature.

Q.15. What is Antivirus software?

A type of software that is used to detect and remove viruses is called Antivirus software. Antivirus programs contain information about different known viruses. They can detect viruses and remove them.

Q.16. List some important Antivirus programs.

Some important Antivirus programs are McAfee, Norton Antivirus and Doctor Solmon's

Q.17. Explain data security.

The protection of data is called data security. Data stored in any computer can be lost due to different reasons. The data can be lost accidentally. Someone can damage the data. Data can be lost completely or partially. The data is much valuable and important than the computer itself. It should be saved in such a way that it may not be lost or damaged.

Q.18. Why is data security important?

Data security is very important to run some organizations successfully. A person may enter the network of the organization and gain unauthorized access to the data. If the unauthorized person deletes important data, the business of the organization may be damaged severely.

Q.19. What do you mean by data protection?

Data protection is a process of hiding personal data from unauthorized persons. Data belonging to a person or organization should be hidden from other persons or organizations. Unauthorized person should not be allowed to access or use that data without permission.

Q.20. Give the definition of software piracy.

Software piracy is the illegal duplication of copyrighted software.

Q.21. What is privacy issue?

Privacy issues means that an individual has the right to see the data collected about him. He also has right to submit an application to view that data at any time.

Q.22. State the purpose of data protection legislation.

Data protection legislation defines the laws that ensure data protection. Many countries have defined the data protection legislation. The data protection legislation of different countries is based on same basic principles.

Q.23. Write down the principles of data protection act.

- The purpose of keeping and distrusting personal data must be clearly defined by that organization that obtains the data.

- The individual about whom data is collected must be informed about the identity of the organization or individual that collects data.

Q.24. What is the purpose of copyright act?

Copyright Act 1976 is the principal law that governs software piracy. Software piracy is now a punishable crime. The punishment may involve huge amounts of penalties.

Q.25. Define password.

Password is a secret word that is used to protect a computer system or program. It may consist of numbers, alphabets or both. The user has to type the password to access the computer system.

Q.26. State the purpose of password.

The purpose of password is to protect data stored on a computer. It protects data from being lost, misused or deleted by any person. The system can be accessed by a person who knows the password. Password can be changed only by authorized person.

Q.27. Define backup.

An additional copy of data or information stored on secondary storage media is called the backup of data.

Q.28. Why is backup important?

It is very important to take the backup of data regularly. The data stored on the system may also be lost, deleted or altered. The backup of data is used if your system crashes accidentally and the data stored in it is lost

Q.29. Give three suggestions to protect computer from virus.

A computer system can be protected from viruses by installing the latest anti-virus, by scanning floppy disk for viruses before use and by avoiding junk or unknown emails.

Q.30. Give some causes of virus.

Virus can spread if the user opens and downloads an email containing a virus or if the user downloads software from Internet containing virus or if the user installs pirated software that contains virus.

Q.31. Why data protection is important?

Data protection is important to protect the private data of a person or organization. It stops illegal access and use of personal data and information. . For example, if Police is using a computer to store the data of culprits, it should not be open to every body

Multiple Choice

1. **Protecting computers and the information they contain against unwanted access, damage, modification or destruction is called:**
   a. Computer monitoring b. Electronic policing
   c. Audit control d. Computer security
2. **Restricted access to the server computer room is a form of:**
   a. Logical security b. Enterprise security c. Physical security d. User security

3. **The measurement of things such as fingerprints and retinal scans used for security access is called:**
   a. Biometrics b. Biomeasurement
   c. Computer security d. Smart weapon machinery
4. **This is not a biometric technique:**
   a. Badge b. Retina c. Face d. Palm print
5. **Which of the following is the most devastating loss to a company?**
   a. Loss of hardware b. Loss of data c. Loss of software d. Loss of printouts
6. **The secrets word or number used for protection is called:**
   a. Biometric data b. Backup c. Passwords d. Private words
7. **Which of the following is an example of a good password?**
   a. Name of a partner or spouse b. Name of a child or pet
   c. Word related to a job or hobby d. None of the above
8. **Security protection for personal computers includes:**
   a. Internal components b. Locks and cables c. Software d. All of these
9. **Computer virus is simply a:**
   a. A disease b. Set of computer instructions or code
   c. Type of bacteria d. Hardware component
10. **A program that interferes with the normal routine of the computers is called:**
    a. Virus b. Antivirus c. Freeware d. Shareware
11. **A special program that can detect and remove viruses from computer is called:**
    a. Virus b. Anti-Virus c. Groupware d. Custom
12. **Which of the following is example of antivirus program?**
    a. Norton b. McAfee c. Dr. Solomon toolkit d. All
13. **Which is not cause of virus?**
    a. E-mail b. Networks c. Pirated software d. Logic bomb
14. **How a virus reaches from one computer to another?**
    a. Data is exchanged between computers b. Exchange of display screen
    c. Exchange of keyboard d. Exchange of printer
15. **Which is harmful for computers?**
    a. Antivirus b. Virus c. Free ware d. Shareware
16. **Which of the following is not an antivirus program?**
    a. Redlof b. Norton c. Dr. Solmon d. McAfee
17. **Which of the following is computer virus?**
    a. Chernobal b. Logic Bomb c. Redlof d. All
18. **Which of the following viruses executes when starting the computer?**
    a. Macro b. File infector c. Boot sector d. Salami shaving
19. **The extension of an executable file is:**
    a. xls. b. doc. c. ext. d. exe
20. **What is a malicious program called that is activated when a specific set of conditions are met?**
    a. Trojan horse b. Virus c. Worm d. Logic bomb
21. **Making illegal copies of copyrighted software is called:**
    a. Software piracy b. Collaboration c. Browsing d. Electronic distribution

22. **Software that is available free for a limited period is called:**
a. Freeware b. Groupware c. Shareware d. Vertical

23. **Which media can be used for backup?**
a. Floppy Diskette b. Zip Disk c. Tape Device d. All

24. **An additional copy of your data stored on storage media is call:**
a. Backup of data b. Taking of Data c. Moving the Data d. None

25. **The right to use the software on the computer is called:**
a. Software copyright b. Site License c. Software piracy d. None

26. **The right of a person to keep his personal information away from others is called:**
a. Privacy b. Private c. Secrecy d. Right

27. **A set of illegal instructions inserted into a legitimate computer program is called:**
a. Trapdoor b. Trojan horse c. Worm d. Bomb

28. **A virus that replicates itself is called:**
a. Bug b. Worm c. Vaccine d. Bomb

29. **Another name for anti virus is:**
a. Vaccine b. Worm c. Trojan horse d. DES

30. **Which one is not a virus?**
a. Trojan Horse b. Logic Bomb c. MCAfee d. Reflof

31. **Most computer crime are committed by**
a. Hackers b. international spies c. highly paid computer consultant d. None

32. **A person who gains illegal access to a computer system:**
a. Hacker b. Worm c. Software pirate d. None

33. **Another name for free software:**
a. Encrypted software b. Copy protected software
c. Public domain software d. Shareware

34. **A virus program is usually hidden in:**
a. The operating system only b. An application program only
c. The disk drivers d. The operating system or application programs

35. **Trojan Horse is a:**
a. Antivirus b. Virus c. Software d. Hardware

36. **McAfee is a:**
a. Virus b. Antivirus c. Hacker d. Worm

Answers

1. d	2. c	3. a	4. d	5. b	6. c
7. d	8. d	9. b	10. a	11. b	12. d
13. d	14. a	15. b	16. a	17. d	18. c
19. d	20. d	21. a	22. c	23. d	24. a
25. a	26. a	27. b	28. b	29. a	30. c
31. a	32. a	33. c	34. d	35. b	36. b

Fill in the Blanks

1. _____ is a secret word to protect data from unauthorized access.
2. Making illegal copies of copyrighted software is called _____.
3. Software that is available free for a unlimited period is called _____.
4. An additional copy of your data stored on storage media is called _____.
5. A program that can detect and remove viruses from computer is called _____.
6. When the virus starts to impact the data, it is known as _____.
7. MacFee, Norton and Dr. Soloman are examples of _____ programs.
8. IR stands for _____.
9. _____ is software used for data compression.
10. Software is the _____ of person who develops it.
11. Software that is available free for a limited period is called _____.
12. FAST stands for _____.
13. Data transfer rate on USB port can be _____ times faster than parallel port device.

Answers

1. Password	2. Piracy	3. Freeware
4. Backup	5. Antivirus software or virus detecting software	
6. Virus infection	7. Anti-virus	8. Intellectual Rights
9. WinZip	10. Copyright	11. Shareware
12. Federation Against Software Theft		13. 10 to 20

True / False

1. Software error can result in data loss.
2. Any person can changed password.
3. All viruses activate in exactly the same manner.
4. A full backup means that once a week you can perform a complete backup.
5. IR stands for intellectual rights.
6. A computer virus is a part of hardware.
7. Passwords, auditor checks and separation of employee functions are data protection techniques.
8. No one has ever been able to read encrypted messages without key.
9. It is legitimate to make a copy of software for backup purposes.
10. The computer fraud and abuse act of 1984 defines software piracy as crime.

Answers

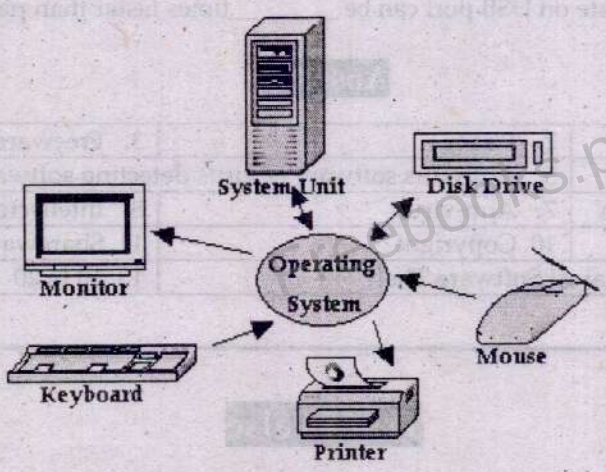
1.	T	2.	F	3.	F	4.	F	5.	T
6.	F	7.	T	8.	T	9.	T	10.	T

Chapter 7

Windows Operating System

Q. Define operating system.

An operating system is system software that provides an interface for user to interact with the computer. It controls the execution of all types of programs. A computer cannot do anything without operating system. Operating system must be installed on every computer.



An operating system is responsible to allocate system resources. These resources include memory, processor, disk space, and peripheral devices such as monitors, printers and modems etc.

Q. Define a user interface. Discuss different types of operating systems on the basis of user interaction.

User Interface

A **user interface** is used to interact with computer. It controls how the user enters data and instructions and how information appears on screen. Different types of operating systems on the basis of user interaction are:

1. Graphical User Interface Operating System

A type of user interface in which the user communicates with the operating system by using a visual environment is called **graphical user interface**. It consists of windows, menus, icons and pointers. The user can select commands from menus and select icons by using a pointing device like mouse. Mouse is used frequently in graphical user interfaces.

Examples

Examples of GUI operating system are Windows, Linux and Solaris.

Characteristics

Some important characteristics of GUI operating system are as follows:

- **Graphical Interface** – Graphical interface increases the understanding of users. They easily understand the environment.
- **Easy to use:** GUI uses buttons, menus and icons etc. These are easy to use because the user does not have to remember the commands.
- **Easy to learn:** GUI is easier to learn. The options are self-explanatory.
- **Attractive:** The color, size and fonts of the graphical environment make it more colorful and attractive.

2. Command-Line Operating System

A type of user interface in which the user communicates with the operating system by typing commands with keyboard is called **command line interface.** Each command activates a program in the operating system. The command line interface is difficult because the user has to remember the commands.

Examples

Examples of command line operating system are DOS and Unix.

Q. How graphical user operating system differs from command-line operating system?

The difference between command-line and GUI operating system is as follows:

Topic	Command line OS	GUI OS
Ease	It is difficult to use.	It is easier to use.
Control	It provides more control of file system and operating system	It provides less control of file system and operating system
Multitasking	Some command line environments provide multitasking but it is difficult to view multiple things on one screen.	GUI enables a user to easily view and manipulate multiple things at once.
Speed	Command line users need to use keyboards to execute command. An advanced command line interface user can perform something faster than an advance GUI user.	GUI uses the mouse for most of the command. It is much slower than working in a command line environment.
Scripting	A command line interface enables a user to easily script a sequence of commands to perform a task or execute a program.	GUI does not provide the facility to script a sequence of command.

Q. What is the purpose of operating system?

There are two basic purposes of an operating system:

- It manages hardware and software resources of computer. The resources include processor, memory and disk space etc.

- It provides a consistent way for application to interact with the hardware without knowing all the details of the hardware.

Q. Briefly describe the evolution of Windows operating system.

Microsoft Windows is a graphical interface operating system. It is developed by **Microsoft Corporation**. It is widely used in business, educational institution and research organizations.

The first successful series of Windows was **Windows 3.x** series. Windows 3.x was an operating environment. It provided a GUI that executed on top of DOS. It replaced the command-line interface with a **point-and-click** system.

Microsoft released Window 95 in 1995. It was a complete operating system for personal computers. Windows 98 was an improved version of window 95. It was released in 1998. It was more stable than Windows 95.

Microsoft also concentrated on networking features in Windows. It released Windows NT (New Technology) with extensive networking features. All later versions of Windows operating systems are based on NT technology. These include Windows 2000 (Server and Professional) and Windows XP.

Q. Discuss different objects of windows operating system.

Windows operating system consists of different graphical objects. Different components of Windows operating system are as follows:

1. Desktop

The on-screen work area that contains windows, icons, menus and dialog boxes is called **desktop**. The desktop is the entering point in Windows. Desktop is the first object that appears when Windows is started. Icons are small graphic that represents programs, drives, folders, and documents. It is used to start program, open a document, or access the contents of a drive or folder.

2. My Computer

My Computer icon is a graphical representation of everything on computer. It is used to view different resources of computer. The resources include drives, files and folders etc. It also contains Control Panel option that provides different tools to configure the computer.

3. Recycle Bin

Recycle Bin is a temporary storage area. It is used to keep deleted files. When a file or folder is deleted, it is not removed from the hard disk permanently. Windows moves it to Recycle Bin. The files remain in there until user recovers them or delete them permanently.

4. My Documents

My Documents is a folder that is automatically created by Windows during installation. It is used for saving documents. Many application programs like MS Word use this folder as default location for storing files.

5. My Network Places

My Network Places is a folder on the Desktop. It contains icons that represent all the computer systems connected via a network.

6. Windows Explorer

Window explorer acts as a file manager in Windows operating system. It is used to manage files and folders on computer. It is an efficient way to locate and manage files on computer. Many actions can be performed on files and folders using Window explorer. It can be used to cut, copy, past, rename or delete a file or folder.

7. Internet Explorer

Internet Explorer is a web browser. It is part of Microsoft Windows operating system. It is used to access information available on the Internet.

8. Control panel

Control Panel is the place to perform system management tasks. It includes installing/uninstalling new hardware devices. It is also used to manage system resources through **administrative tools**. It is also used to share printers and setup date and time etc.

9. Window

A **window** is the most important feature of Windows operating system. It is the basic building block of all graphical objects. Windows views most of the graphical objects as a window such as button, menu and toolbar etc. Each application starts in its own window.

10. Start Button

Start button is used to access most of the programs installed on the computer. It is used to perform the following tasks easily:

- Open or search a document
- Manage files
- Maintain system etc.
- Change Windows settings
- Getting help

Q. What is the purpose of mouse and keyboard? Discuss important events of mouse and keyboard.

Mouse and keyboard are the basic input devices used with personal computer. Almost every operating system running on PCs provide the facility to enter data and instructions through these devices.

Events

Microsoft Windows captures different actions performed by mouse and the keyboard. These actions are known as **events**.

Mouse Events

An activity that can be performed by using the mouse is known as **mouse event**. A typical mouse can perform the following events:

- **Left Click:** It is the most frequently used mouse event. This event occurs when left mouse button is pressed. It is used to select a graphical object such as an icon or text in a document. It is also used to press a button, close, open or minimize window etc.
- **Right Click:** This event occurs when right mouse button is pressed. It is used to view the properties of an object such as file, folder or desktop etc.

- **Drag:** This event occurs when the mouse is moved while pressing left mouse button. It is used to select multiple items at a time. It is also used to move an object from one location to another.

Keyboard Events

Keyboard events are the actions that can be performed by using a keyboard. Different programs perform different actions with these events. Following are the most common events triggered with a keyboard.

- **Key Down:** The event triggers when the user presses any key of keyboard.
- **Key Up:** The event triggers when the user releases a pressed key of keyboard.

Q. List different features of Windows 2000.

Some important features of Windows 2000 are as follows:

1. Graphical User Interface

Windows provides graphical user interface. It uses windows, icons, menus and other graphical objects to issue commands. The graphical environment makes it easier to perform different tasks. It is also more stable and convenient interface.

2. Multi-Tasking

Multi-tasking is the capability of loading multiple programs in memory and executing them at the same time. Windows 2000 is a multi-tasking system. A single user can run multiple programs simultaneously. The user can edit a document while listening music.

3. Multi-User

It means that many users can use the computer at the same time. These users can be connected to a computer over the Internet. Windows 2000 is a multi-user operating system.

4. Multi-Processing

Multi-processing is the capability to support and utilize multiple processor at the same in a computer. Windows 2000 supports multiple processing. Two or more processors can execute different programs at the same time. It increases the output of the computer.

5. Plug and Play

Plug-and-play is the capability to detect and configure a device and install the appropriate device driver. Windows 2000 has the feature of plug and play. It contains a large number of device drivers. When a new hardware device is attached to computer, it detects the device and installs its driver if it is available.

6. Backup and Recovery

Backup and recovery feature is used to backup data and recover it in case of hard disk failure. Windows 2000 allows back up of files on hard disk or other media.

7. Networking

Windows 2000 provides networking features. It provides the facility to establish, maintain and troubleshoot a network.

Q. What do you meant by Plug and play? Does Window 2000 provide this feature?

Plug-and-play is a capability to detect and configure a device and install appropriate device driver. Windows 2000 has the feature of plug and play.

The latest Windows operating systems contain a large number of device drivers. When a new hardware device is attached to the computer, it automatically detects the device and installs its driver if it is available. If the driver for the new device is not available, the operating system guides the user to install it manually from CD or floppy disk etc.

Q. Write short notes on each of the following:

- Disk Management Utility
- Print Queue
- Windows Explorer
- File Management

Disk Management Utility

Disk Management utility provides a graphical interface for user to view and perform maintenance on all hard drives and CD drives. The user can check the status of these drives.

The user can find the size of the drive. Disk management also indicates the drive that contains the system partition.

Window Explorer

Window explorer acts as a file manager in Windows operating system. It is used to manage files and folders on computer. It is an efficient way to locate and manage files on computer. Many actions can be performed on files and folders using Window explorer. It can be used to cut, copy, past, rename or delete a file or folder. It contains two panes. The left pane displays folders and drives in a tree view. The right pane shows the detailed view of the folder or drive selected in the left pane.

Print Queue

Print queue is a collection of all documents that are waiting for printing task. Windows maintains a print queue for all print jobs. Print queue can be used to restart or cancel and printing task. Print queue is used because the speed of printer is slower than computer. If multiple printing requests are issued, the printer cannot print them all at once. That is why print queue is used. The print jobs are printed in the same sequence in which they are received in the print queue.

Print queue is displayed in print queue dialog box. This dialog box can be displayed in the following two ways:

- Click **Start** menu. Click **Printers** menu and double click on printer in **Printers** folder.
- A printer icon is displayed in system tray when the printer is printing a document. The user can double click on the icon to view print queue.

File management

File management is a process of maintaining and organizing files in the computer. Files are the recognized by their extension in Windows. Window checks the file extension when the user opens a file. File extension is checked to determine what action should be taken. All registered file extensions are stored in Windows registry.

A registered file type can have multiple actions e.g. open and print etc. If Windows does not recognize the file type, it displays a dialog box to choose the appropriate application to view the file.

Q. Define Partitition? Briefly describe primary and extended partitioning.

Disk partition is a disk management technique. It is the logical division of the hard disk. A hard disk can contain one or more partitions. Partitioning is useful if the user wants to use multiple operating systems.

Types of Partitions

Windows usually creates two basic types of partitions. These are as follows:

1. Primary Partition

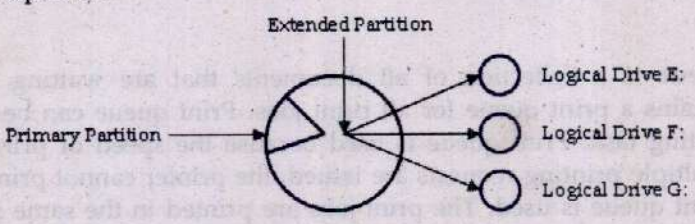
Primary partition is a type of partition that can be used as system partition. The system partition contains the hardware-specific files required to load windows-2000.

A primary partition can be created to occupy the entire hard disk or a potion of it. Any hard disk can have a maximum of four partitions. All four partitions can be primary partitions. Each primary partition must be formatted after partitioning. The primary partition should be formatted as a single logical drive only. It cannot be subdivided into multiple logical drives.

2. Extended Partition

Extended partition is a type of partition that can be further divided into sub-partitions. The sub partitions are known as logical partitions. It is done to use multiple operating systems. A hard disk can have only one extended partition.

The extended partitions can also be formatted to create drives. Any number of drives can be created on an extended partition unlike primary partitions. Each drive can be designated by an alphabet.



The figure shows a hard disk with one primary partition and one extended partition. The extended partition is subdivided into logical drives.

Q. Differentiate the following:

- Multi-tasking and Multiprocessing
- Sing-user and multi-user operating system

1. Multitasking & Multiprocessing

An operating system that can execute more than one program at the same time is called **multitasking operating system**. It can support single user at one time to perform different tasks. It supports the use of single processor. Some examples of multitasking Operating Systems are UNIX and Windows 2000.

An operating system that supports two or more processors running programs at the same time is called **multiprocessor operating system**. It supports multiple users at one time to perform different tasks. It supports multiple processors. Some examples of multiprocessing Operating Systems are Linux, UNIX and Windows 2000.

2. Single-user & Multi-user Operating System

An operating system in which only one user can work at a time is called single-user operating system. DOS is an example of single-user operating system.

A **multi-user operating system** allows multiple users to use the same computer at the same time. Some examples of multi-user operating systems are Linux, UNIX and Windows 2000.

Q. Write the procedure for adding new printer.

The procedure for adding a new printer is as follows:

1. Open **Printers Window** by selecting **Printers** shortcut from **Start** menu's **Settings** group.
2. Click **Add Printer** icon in **Printers** to launch **Add New Printer** wizard.
3. Click the **Next** button to begin the printer installation process.
4. Select the **Local Printer** radio button.
5. Click the **Next** button to continue.
6. Select the port to which your printer is connected in the **Available Ports** list.
7. Click the **Next** button to continue
8. Scroll down in the **Manufacturers** list and select the manufacturer of your printer. It displays list of printer models.
9. Select the model of your printer and click **Next** button. If your printer is not listed, click the **Have Disk** button and browse to the location of driver files
10. Enter a name of your printer. By default, the system uses the name associated with the printer driver.
11. Click the **Next** button to continue. **Print Test Page** will appear.
12. Select **Yes** to print a test page or **No** to skip test page.
13. Click the **Finish** button to complete the installation.

Short Questions

Q.1. Write the names of different operating systems on the basis of user interaction.

Different types of operating systems on the basis of user interaction are:

- Graphical User Interface operating systems
- Command-line operating systems

Q.2. Why a computer needs an operating system.

A computer needs an operating system to work. Computer cannot perform any task without operating system. Operating system coordinates various functions of computer's hardware. It also provides support for running application software.

Q.3. Define graphical user interface operating system.

A type of user interface in which the user communicates with the operating system by using a visual environment is called **graphical user interface**. It consists of windows, menus, icons and pointers. The user can select commands from menus and select icons by using a pointing device like mouse.

Q.4. Give some examples of GUI operating systems.

Examples of GUI operating system are Windows, Linux and Solaris.

Q.5. Write important characteristics of GUI operating system.

Some important characteristics of GUI operating system are as follows:

- Graphical Interface: Graphical interface increases the understanding of users.
- Easy to use: GUI is easy to use because user does not have to remember commands.
- Easy to learn: GUI is easier to learn. The options are self-explanatory.
- Attractive: Color, size and fonts of GUI make it colorful and attractive.

Q.6. Define command-line operating system.

A type of user interface in which the user communicates with the operating system by typing commands with keyboard is called **command line interface**. The command line interface is difficult because the user has to remember the commands.

Q.7. Give some examples of command-line operating systems.

Examples of command line operating system are DOS and Unix.

Q.8. Differentiate between GUI and command line operating system.

GUI operating system provides a visual environment is called **graphical user interface**. It consists of windows, menus, icons and pointers. The user can select commands from menus and select icons by using a pointing device like mouse. Command line operating system is used by typing commands with keyboard. It is difficult because the user has to remember the commands.

Q.9. State the purpose of operating system.

- It manages hardware and software resources like processor, memory and disk space etc.
- It provides a consistent way for application to interact with hardware without knowing all the details of the hardware.

Q.10. List out different objects of windows operating system.

Different components of Windows are Desktop, My Computer, Recycle Bin, My Documents, My Network Places, Windows Explorer, Internet Explorer and Control Panel.

Q.11. Define Desktop.

The on-screen work area that contains windows, icons, menus and dialog boxes is called desktop. The desktop is the entering point in Windows. Desktop is the first object that appears when Windows is started.

Q.12. State the use of My Computer folder.

My Computer is a folder on the Desktop. It provides access to the system's disk drives and other hardware. You can double click it to see its contents.

Q.13. What is the purpose of Recycle Bin?

Recycle Bin is a temporary storage area. It is used to keep the deleted files. When a file or folder is deleted, it is not removed from the hard disk permanently. Windows moves it to Recycle Bin. The files remain in Recycle Bin until the user recovers them or delete them permanently.

Q.14. What is My Documents folder?

My Documents is a folder that is automatically created by Windows during installation. It is used for saving documents. Many application programs like MS Word use this folder as default location for storing files.

Q.15. What is the use of Windows Explorer?

Window explorer acts as a file manager in Windows operating system. It is used to manage files and folders on computer. It is an efficient way to locate and manage files on computer. It can be used to cut, copy, past, rename or delete a file or folder.

Q.16. What is Internet Explorer?

Internet Explorer is a web browser. It is part of Microsoft Windows operating system. It is used to access information available on the Internet.

Q.17. What is the use of Control panel?

Control Panel is the place to perform system management tasks. It includes installing/uninstalling new hardware devices. It is also used to manage system resources through Administrative tools. It can also be used to share printers and setup date and time.

Q.18. Name five options of control panel.

The five options of control panel are Add/Remove Hardware, Add/Remove Programs, Printers, Keyboard and Mouse.

Q.19. Define window.

A window is the most important feature of Windows operating system. It is the basic building block of all graphical objects. Windows views most of the graphical objects as a window such as button, menu and toolbar etc. Each application starts in its own window.

Q.20. Write some uses of Start Button.

Start button is used to access most of the programs installed on the computer. It is used to open or search documents, change settings, Manage files, Get help and Maintain system.

Q.21. Define event.

Microsoft Windows captures different actions performed by mouse and the keyboard. These actions are known as events. Some important events of mouse and keyboard are click, right click, and drag.

Q.22. Name some events of keyboard.

Keyboard events are the actions that can be performed by using a keyboard. Different programs perform different actions with these events. The most common events triggered with a keyboard are key down and key up.

Q.23. List different features of Windows 2000.

Some important features of Windows 2000 are Easier to Use , Multi-Tasking, Multi-User, Multi-Processing , Plug and Play and Networking.

Q.24. What do you mean by Plug and play?

Plug-and-play is the capability to detect and configure a device and install its device driver. Windows 2000 contains a large number of device drivers. When new hardware device is attached to computer, it detects it automatically and installs its driver if it is available.

Q.25. State the purpose of disk management utility.

Disk Management utility provides a graphical interface for user to view and perform maintenance on all hard drives and CD drives. The user can check the status of these drives. The user can find the size of drive. Disk management also indicates the drive that contains the system partition.

Q.26. Describe Print Queue.

Print queue is a collection of all documents that are waiting for printing task. Windows maintains a print queue for all print jobs. Print queue can be used to restart or cancel and printing task.

Q.27. Define file management.

File management is a process of maintaining and organizing files in the computer. Files are the recognized by their extension in Windows. Window checks the file extension when the user opens a file. File extension is checked to determine what action should be taken.

Q.28. Define Partition?

Disk partition is a disk management technique. It is the logical division of the hard disk. It divides the memory unit into sections. A hard disk can contain one or more partitions. Partitioning is useful if the user wants to use multiple operating systems.

Q.29. Describe primary partition.

A primary partition can be created to occupy the entire hard disk or a potion of it. Any hard disk can have a maximum of four partitions. Each primary partition must be formatted after partitioning. The primary partition should be formatted as a single logical drive only. It cannot be subdivided into multiple logical drives.

Q.30. Describe extended partition.

Extended partition is a type of partition that can be further divided into sub-partitions. The sub partitions are known as logical partitions. It is done to use multiple operating systems. A hard disk can have only one extended partition.

Q.31. Differentiate between multitasking and multiprocessing.

An operating system that can execute more than one program at the same time is called multitasking operating system. It supports the use of single processor. An operating system that supports two or more processors running programs at the same time is called multiprocessor operating system. It supports multiple processors.

Q.32. Distinguish between single-user and multi-user operating system.

An operating system in which only one user can work at a time is called single-user operating system. A multi-user operating system allows multiple users to use the same computer at the same time.

Q.33. How is multitasking an important feature of Windows operating system.

Multitasking is an important feature of Windows operating system. This feature allows the user to execute more than one program at the same time. For example, the user may download files from Internet and listen to the music at the same time.

Multiple Choice

1. **Windows is the most popular product of:**
   a. Sun System b. Microsoft c. Hewlett d. ANSI
2. **Which of the following is NOT a type of user interface?**
   a. Command-line b. System interface c. Design interface d. Both b and c
3. **Which interface uses icons and windows?**
   a. Command-driven b. Windows-oriented c. Graphical-user d. None

4. **Interface used by DOS is called:**
   a. Menu-driven interface b. Command-driven interface
   c. Design interface d. System Interface
5. **Under MS-DOS, a user communicates with the operating system by issuing:**
   a. Commands b. Instructions c. Routines d. Procedure
6. **GUI stands for:**
   a. Graphical User Interface b. General User Interrupt
   c. Graphs, Utilities, Icons d. Grayed User Interface
7. **Which of the following operating systems involves a GUI-based user Interface?**
   a. Windows b. Linux c. Solaris d. All
8. **Which operating systems provides only a command-line user interface?**
   a. Mac OS b. DOS c. Windows d. None
9. **The MS-DOS operating system is a:**
   a. Command line Interface b. Single user c. Single tasking d. All
10. **The ability of an operating system to control the activities of multiple programs at the same time is called:**
    a. Multitasking b. Multi-processing. c. Multi-operating. d. Multi-paging.
11. **Microsoft Windows version 3.1 is a:**
    a. Fully functioning operating system. b. Icon c. Menu d. GUI on top of DOS
12. **The "NT" in Windows NT stands for:**
    a. Not tested. b. Network terminal c. Network technology d. New technology
13. **Interface used by Windows is called:**
    a. Menu-driven interface b. Command-driven interface
    c. Graphical User interface d. Prompt interface
14. **Which of the following services provided by the operating system**
    a. File-system Management b. Hardware Management
    c. User interface d. All of these
15. **A small image that represents a program, instruction, or file etc. is called:**
    a. Menu b. GUI c. Command Language d. Icon
16. **Windows is operating system used to :**
    a. coordinates computer activities b. Access files on a computer.
    c. open and close programs on a computer d. All of these are correct
17. **'Drag & Drop' means to select the item, hold down the mouse and:**
    a. Move files from one window to another b. Move files from one folder to another
    c. Move text between documents d. All
18. **Pressing and releasing the left mouse button quickly is called:**
    a. Clicking b. Dropping c. Pointing d. Dragging
19. **The process of touching an object with mouse pointer is called:**
    a. Pausing b. Dropping c. Pointing d. Hovering
20. **Which action is usually used after pointing at an object to execute a command, such as launching an application or opening a file?**
    a. Clicking b Double clicking c. Triple Clicking d. Dragging & dropping
21. **The work area on which windows, icons, menus and dialog box appear is called:**
    a. Screen b. Desktop c. working area d. None

22. **All files deleted from computer are stored in:**
a. Sys-tray b. Temporary files c. Recycle Bin d. My documents:

23. **Software can be removed/installed through:**
a. Control Panel b. Installer c. Debugger d. Linker

24. **Add New Hardware option exists in:**
a. Main menu b. Status bar c. Task bar d. Control panel

25. **Devices which are automatically detected by Windows are called:**
a. Plug & Play devices b. Automatic Devices
c. Serial Devices d. Installed devices

26. **List of documents waiting to be printed on printer is called:**
a. Print list b. Print stack c. Print queue d. Print line

27. **Files can exist in folders but folders cannot exist in:**
a. Paths b. Files c. Folders d. Documents

28. **Which of the following is used to manage Files & Folders?**
a. Control Panel b. Window Accessories
c. Windows Explorer d. Internet Explorer

29. **Which of the following is the entering point in Windows?**
a. My computer b. Desktop c. My document d. Windows explorer

30. **Which of the following contains the administrative tools?**
a. Control panel b. Start button c. Internet Explorer d. Recycle bin

31. **Which of the following is used to surf Internet?**
a. Window explorer b. Internet explorer c. Start button d. Control panel

32. **Which of the following is used to access programs installed on computer?**
a. Start button b. Windows explorer c. Internet explorer d. None

33. **Which of the following is based on NT Technology?**
a. Windows 2000 b. Windows 98 c. Window 3.1 d. widows 95

34. **Which of the following is a mouse event?**
a. Left click b. Right click c. Double click d. All

35. **Which of the following is a keyboard event?**
a. Key up b. Key down c. Both a and b d. Neither a nor b

36. **The maximum partitioning that can be created on a basic disk is:**
a. 2 b. 4 c. 6 d. 8

37. **How many types of partitions?**
a. 2 b. 4 c. 6 c. 8

38. **As compared to command line operating system, a GUI operating system is:**
a. More efficient b. Easier to use c. More reliable d. All

39. **Ctrl + Alt + Del is:**
a. An invalid key combination b. Recognized by windows only
c. Used to close the active window d. Both b and c

40. **An operating system is a:**
a. System utility b. Application software
c. System software d. Software package

41. **Windows 2000 is a:**
    a. Multiuser operating system
    b. Multiprocessing operating system
    c. Multitasking operating system
    d. All
42. **Internet explorer is used to:**
    a. Access the Internet
    b. Explore the system resources
    c. Perform maintenance on the Hard disk
    d. Navigate file and folders on the computer

Answers

1. b	2. d	3. c	4. b	5. a	6. b
7. d	8. b	9. d	10. a	11. d	12. d
13. c	14. d	15. d	16. d	17. d	18. a
19. c	20. b	21. b	22. c	23. a	24. d
25. a	26. c	27. b	28. c	29. b	30. a
31. b	32. a	33. a	34. d	35. c	36. b
37. a	38. d	39. b	40. c	41. d	42. a

Fill in the Blanks

1. GUI stands for_____.
2. The capability of an operating system to load multiple programs into memory at one time is called_____
3. With plug and play, computers can automatically_____ and_____ a device.
4. Multiple actions can be performed on a _____ file type.
5. _____ Partitions refers to a portion of disk that can contain other partitions.
6. A_____ operating system allows multiple users to perform multiple tasks at the same time.
7. _____offers many action that can be performed on files and folders.
8. Windows maintain a _____ for all printing jobs.
9. All deleted items are stored in _____
10. The Disk Management utility gives you a _____ interface.

Answers

1. Graphical User interface				2. Multi-tasking	
3. Detect, configure		4. Registered		5. Extended	
6. Multi-user		7. Files & folder		8. Print queue	
9. Recycle bin		10. Graphical			

True / False

1. Primary partitions cannot be created on basic disks.
2. MS Windows is a single user operating system.
3. In Windows Explorer left pane displays folders & drives on your computer in a tree view shape.
4. With Windows explorer you can only manage local files. Folders & drives.
5. GUI was first introduced by Apple's Macintosh computers.
6. Operating System is responsible for the effective use of computer system.
7. Maximum four partitions can be created on basic disk.
8. Windows checks the file extension against a database of registered file types.
9. Disk Management also indicates which drive contains the system partition.
10. Disk is partitioned prior to Windows installation on a computer.

Answers

1. F	2. F	3. T	4. F
5. T	6. T	7. T	8. T
9. T	10. T		

Chapter 8

Word Processing

Q. Briefly describe the term "word processing"?

The process of creating and editing text documents is known as **word processing**. It also includes formatting and printing documents in different ways. Word processing is used by business organizations, government departments and individuals for creating different types of documents.

Word processing is one of the most common applications in computer. More than 90 percent people using personal computers also use word processing. Word processing is used for the following purposes:

- Preparing notes
- Writing letters
- Preparing newspapers, magazines & advertisements etc.
- Writing books
- Designing resumes

Q. What is word processor? What are the advantages of word processing over typewriter?

Word processor is a type of application software. It provides useful tools for creating all kinds of text documents. Word processor can manipulate text. It can also be used to add images, sounds, charts and graphics in documents. Word processors can also be used to create documents for publishing on the **World Wide Web**.

Advantages of Word Processor over Typewriter

Word processing has many advantages over typewrite. These are as follows:

- A document can be changed without retyping the entire document.
- A typing mistake can be corrected easily.
- A paragraph can be deleted without any trace.
- It is easy to insert word, sentence or paragraph in the middle of a document.
- Word processors can move sections of text from one place to another easily.
- The text can be moved within a document or between different documents.
- The text can be duplicated easily without type it again.

Q. What is simple word processor or text editor? Discuss its features.

A **text editor** is a simple word processor that is used to type and edit text. There are different types of word processors. Different word processors provide different facilities. A word processor that provides only basic features is called text editor. Word Pad and NotePad are examples of text editors.

Features of Text Editor

Some common features are as follows:

1. Insert text

Text editor is used to insert text anywhere in the document.

2. Delete text

Text editor is used to delete characters, words, lines or pages as easily.

3. Cut and Paste

Text editor provides the facility to move text from one place in a document and insert it somewhere else.

4. Copy

Text editor is used to duplicate a section of text

5. Page Size and Margin

Text editor is used to define various page sizes and margins. The text editor will automatically readjust the text so that it fits properly

6. Search and Replace

Text editor is used to find a particular word or piece of text by using **Find** command. The found word can be replaced by executing **Replace** command.

7. Word Wrap

Word-wrap continues text on next line if it does not fit at the end of the current line.

Q. Explain feature of full-features word processor.

The advanced word processors are called **full-featured word processors**. These word processors provide additional features to format documents in more sophisticated ways. Following are some important features of an advanced word processor.

1. File management.

An advanced word processor contains file management capabilities. It can be used to create, delete, move and search files.

2. Font Specification

The appearance of text in the document is called **font** or **typeface**. Full-featured word processor can change the font of all or selected text to improve readability. Fonts are used to create the text of different styles and sizes. The user can specify bold, italic and underline.

3. Graphics

Full-featured word processor is used to insert images and graphs in a document. Some word processors also provide the facility to create images. Some word processors only provide the facility to insert images created in different programs.

4. Header, Footer and page Numbering

Full-featured word processor provides **Header and Footer** feature. Header is the text that is added to the top of every page. It may include document title or page number. Footer is the text that is added at the bottom of the every page.

5. Spell Checker

Spell checker features in full-featured word processor help the user to correct any spelling in the document. The misspelled words are highlighted.

6. Layout

Full-featured word processor provides the facility to specify different margins within a single document. It also specifies different methods for indenting paragraphs.

7. Table of Contents and Indexes

Full-featured word processor can also generate a table of contents and index. It is based on special code inserted in the document. It is very helpful in writing books.

8. Merges

It is used merge text from one file into another file. It is useful to generate many files that has same format but different data. Generating mailing labels is an example of merges.

9. Thesaurus

Thesaurus feature provides the appropriate word or alternate words.

10. AutoCorrect

Word processor automatically corrects many commonly misspelled words and punctuation marks with the AutoCorrect feature.

11. Document Window

Full-featured word processor can be used to edit two or more documents at the same time. Each document appears in a separate window. It is very useful if a user is working on a large project that consists of several files.

12. Footnotes and Cross-reference.

Full-featured word processor can generate **footnotes** at the bottom of the page. Footnotes are used to cross-reference other section of the document easily.

13. WYSIWYG

It Stands for **What You See Is What You Get**. It means that the printed copy of the document will be similar as appears in the word processor.

14. Macros

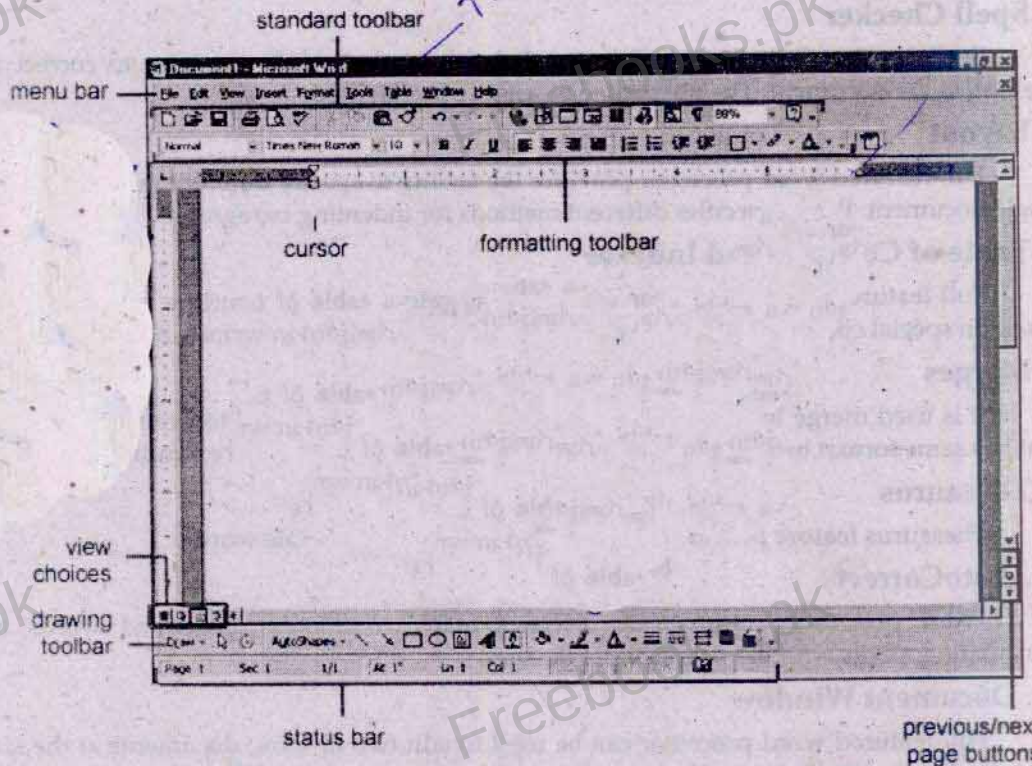
A **macro** is a character or word that represents a series of keystrokes. The keystrokes may represent text or commands. The macros are defined to save a lot of time for repeating the same task.

Q. Explain word processing interface.

Word processor interface consists of main editing window. It displays a document and several tools to manipulate it. Tools are grouped together in different toolbars in order to work with document.

Title Bar

Title bar is located at the top of the screen. Word Processor displays the name of the current document on it.



Menu Bar

Each word on the menu bar represents a different menu. Each menu contains different commands of Word.

Standard Bar

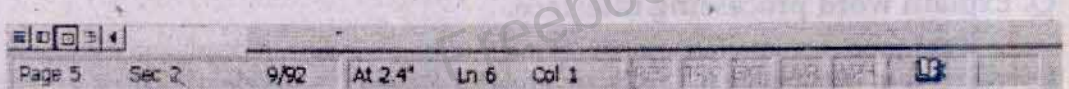
Standard bar displays some of the most common word processing tasks. The tasks are opening, copying and printing files etc.

Formatting Toolbar

Formatting toolbar is used to access various formatting commands quickly such as font type, font style and text alignment etc

Status Bar

The status bar is a horizontal area at the bottom of the document window. It provides information about the current state of the documents.



Scroll Bars

Scroll bars are used to move in the document. You can scroll the document by clicking the **scroll arrows** at either end of the scroll bar or by dragging the **scroll button** in scroll bar.

Rulers

The horizontal ruler can be used to set tab stops and indents or to adjust the width of columns. The horizontal or vertical ruler can also be used to change the page margins or place items on the page.

Q. What do you mean by entering and editing text in word processor? What are different ways to edit text in word processor?

The processing of typing text in a document is called **entering** text. The processing of changing the existing document is called **editing** text. The word processor places a blinking insertion point at the top left corner of screen. It is known as **cursor**. The cursor indicates the location where the next character will be placed in the document. The cursor moves forward on the screen as the user types. The cursor moves to the next line as it reaches the end of line.

Word process allows the user to change some text without retyping the whole document. It is different from type writer where the user has to type the whole document again. There are many ways to edit an existing document.

1. Typing Modes

All word processor provide two modes of typing. These are as follows:

i. Insert Mode

Insert mode is used to insert text in the existing document. The existing character moves to the right side when the user types a character. It is the default mode of MS Word. The following procedure is used to write text in insert mode:

- Place the cursor where the text is to be typed in insert mode.
- Make sure that **[OVR]** option on status bar is not highlighted. If it is highlighted, press **Insert** key to disable it.
- Type any text. The existing text will move to the right side and new text will appear.

ii. Overtype Mode

In overtype mode, the new character replaces the existing characters. The following procedure is used to write text in overtype mode:

- Place the cursor where the text is to be typed in overtype mode
- Press the **Insert** key. The **Overtype** mode will be activated. The **[OVR]** option on status bar will be highlighted.
- Type any text. The existing text will be overwritten by the new text.

Insert Mode

Overtype Mode

2. Erasing Text

Two keys on the keyboard are used to erase text from a document. These are:

i. Delete Key

The delete key erases the character to the right of the cursor.

ii. Backspace key

Backspace key erases the character to the left of the cursor.

The delete and backspace keys erase one character at a time. The user can select multiple characters and then press delete key to delete all selected characters.

3. Undo and Redo

Undo command is used to remove the effect of the last action or number of actions. Redo command is used to remove the effect of Undo command.

4. Formatting text

Formatting of a document includes:

- Changing the appearance of the text
- Adding picture and graphics
- Controlling the layout of the text on the page

The formatting toolbar is the easiest way to change any attribute.

Q. Define font and discuss its types.

Font

The appearance of text in the document is called font or typeface. Fonts are used to make the text of different styles and sizes. There are two general categories of fonts:

- Serial
- Scan-Serial

This is a serif font.

This is a sans serif font.

♦♋○□●♏ (dingbats)

1. Serial

Serial font displays tiny little lines or extensions at the tops and bottoms of most characters in the font.

Example

Times New Roman

2. Scan-Serial

This type of font does not have serifs. It adds decorative touches to a document. This type of font is useful for headings, so they stand out from body text.

Example

Arial

Q. What are the characteristics that greatly affect the appearance of text on the page?

1. Font Size

Font size can be set from the formatting toolbar. Font size is measured in points. A common font size used in business documents is 82-points type.

2. Font Style

Font style is used to bold, italicize and underline the text. Formatting toolbar contains separate button for all of these options.

3. Font Color

Font color is used to change the color of the text.

In addition to these basic characteristics many effects can also be applied to all types of fonts. These are as follows:

- **Strikethrough:** It draws a line through the middle of the text.
- **Shadow:** It adds a shadow behind the text.
- **Outline:** It displays inner and outer boundaries of each character.
- **Superscript:** It raises the text and reduces font size like X^3
- **Subscript:** It lowers the text and reduces font size like X_3
- **Emboss:** it displays text as raised on the screen.

Q. What is paragraph? Describe formatting features for paragraph formatting?

Paragraph

Paragraph is a collection of text that ends with **Enter** key. MS Word inserts a new paragraph in the document wherever the user presses the **Enter** key.

Paragraph Formatting

Formatting that is applied to a complete paragraph is called **paragraph formatting**. Important paragraph formatting features are as follows:

1. Line Spacing

The white space between two adjacent lines is called **line spacing**. Line spacing can be changed to increase the readability of text in a paragraph. Lines spacing can be single-spaced, double-spaced or set to any spacing.

2. Paragraph Spacing

The white space before and after a paragraph is called **paragraph spacing**. By default the paragraph spacing is same as the line spacing but it can be changed.

3. Margins

Margin is the amount of white space around the top, left, right, and bottom of text on a page. A margin defines the boundaries of the text. The text cannot cross these boundaries.

4. Indentation

Indentation is the amount of space from page margin at the start of paragraph. It is used to highlight some text in the document. It can be set to affect every line of text or a single line in a paragraph.

5. Alignment

Alignment determines how text is positioned between the left and right margins of the page. Different types of alignments are as follows:

- **Left alignment:** The text is positioned along the left margin of page. It the default paragraph alignment.
- **Right alignment:** The text is positioned along the right margin of page.
- **Center alignment:** The text is positioned in the center of right and left margins of page.
- **Justified alignment:** The text is positioned along both right and left margins of page.

Q. Describe formatting feature for page formatting?

Page formatting is the layout of the page when it is printed on a printer. It includes page size, page orientation, page margins, headers and footer etc. Page formatting is defined in page setup dialog box.

1. Page size

The length and the width of a page of a document is called **page size**. Page size is very important in the formatting of the page. Page formatting changes according to the size of the page. Changing the size of the page can disturb the formatting of the whole document. It is better to set the page size before formatting it.

2. Page Orientation

The direction in which document is printed on the paper is called **page orientation**. The document can be printed on the paper in two ways. These are

- **Portrait:** Portrait printing means that the paper is taller than it is wide. Most letters are printed in portrait orientation.
- **Landscape:** Landscape printing means that the paper is wider than it is tall. Tables with a larger number of columns are often printed in Landscape orientation.

Page orientation of document is defined in page setup dialog box.

3. Header and Footer

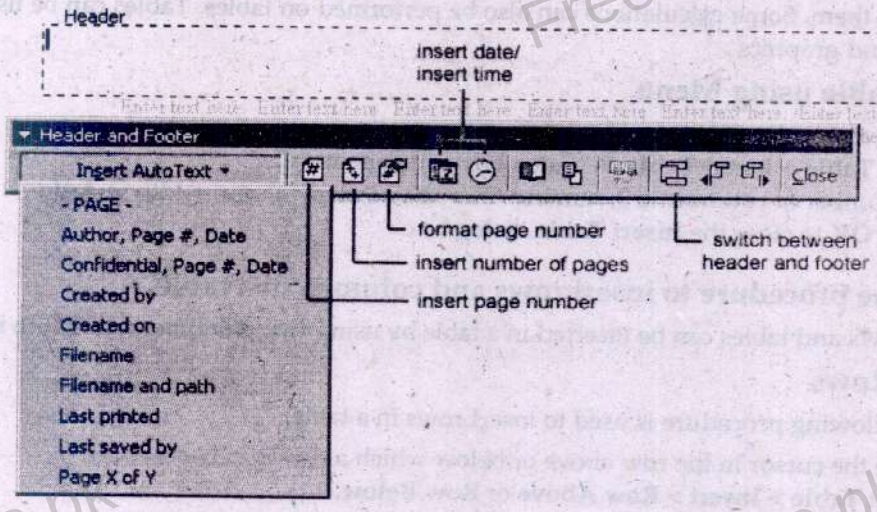
Header is text that is added to the top margin of every page. It includes document title or page number. **Footer** is text that is added to bottom margin.

Q. What is Header and Footer? Write the procedure to use this option.

Header is the text that appears at the top of each page. Footer is the text that appears at the bottom of each page.

1. Select **View > Header and Footer** from menu bar. The **Header and Footer** toolbar will appear.
2. Type the heading in **Header** box.

3. Click the **Insert AutoText** button to view a list of quick options available.
4. Use other options on toolbar to add page numbers, current date and time.
5. Click **Switch Between Header and Footer** button on toolbar to add footer.



6. Click the **Close** button on the toolbar.

Q. Write the procedure to insert page numbers in a document.

The procedure to insert page number in a document is as follows:

1. Select **Insert > Page Numbers** from menu bar. Following dialog box will appear.
2. Select the position of the page numbers from the Position drop-down menu.
3. Select the alignment of page numbers in the Alignment drop-down menu.
4. If you do not want the page number to show on the first page, uncheck the Show number of first page box.
5. Click **OK**.

Q. What is column? Write the procedure to insert columns in word.

Columns are very effective format for certain types of documents. Presenting text in columns is a powerful feature of MS Word. It is every easy to make column of the text. MS Word can arrange text in two or more columns like a newspaper or magazine. The text from the bottom of one column automatically moves to the top of the next column.

The procedure for inserting columns Word is as follows:

1. Click the **Columns** button on the standard toolbar.
2. Select the number of columns by dragging the mouse over the diagram.

The following procedure is used to choose more column options:

1. Select **Format > Columns** from the menu bar. The Columns dialog box is used to choose the properties of the columns.
2. Select the number and width of the columns from the dialog box.

Q. What is Table? How a table is created in MS Word?

A table is a method for presenting information in rows and columns. In a table the intersection of a row and a column is called a cell. The user can insert text or numbers in a table and sort them. Some calculations can also be performed on tables. Tables can be used to arrange text and graphics.

Creating Table using Menu

1. Open a new document.
2. Click **Table > Insert Table**. A dialog box will appear.
3. Set number of columns to 3, number of rows to 4, and column width to **Auto**.
4. Click **OK** to close the **Insert Table** dialog box.

Q. Write the procedure to insert rows and columns in a table.

The rows and tables can be inserted in a table by using **Insert** submenu of **Table** menu.

Inserting Rows

The following procedure is used to insert rows in a table:

1. Place the cursor in the row above or below which a row is to be inserted.
2. Select **Table > Insert > Row Above** or **Row Below**.

A new row will be added in the table according to the selected option.

Inserting Columns

The following procedure is used to insert rows and columns in a table:

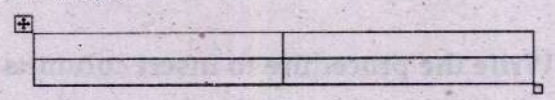
1. Place the cursor in the column after or before which a column is to be inserted.
2. Select **Table > Insert > Column to the Left** or **Column to the Right**.

A new column will be added in the table according to the selected option.

Q. Write the procedure to move and resize a table.

The following procedure is used to move a table:

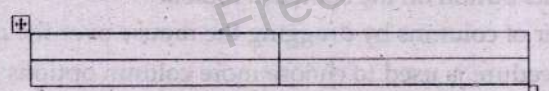
1. Place the cursor over the table. A **table resize handle** ▫ will appear on the right bottom corner of the table.



2. Place the cursor over the **table resize handle**. The cursor will change to ↘ shape.
3. Drag **table resize handle** to change table size.

The following procedure is used to move a table:

1. Place the cursor over the table. A **table move handle** ⊞ will appear on the top left corner of the table.



2. Place the cursor over the **table move handle**. The cursor will change to ✥ shape.
3. Click and drag the table to change its location.

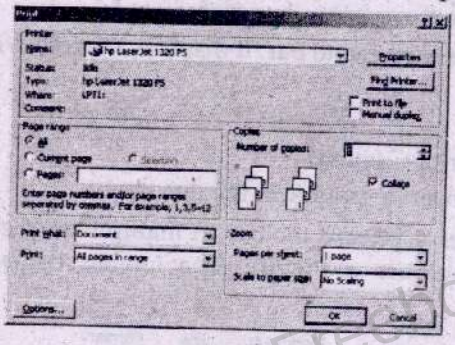
Q. Write the procedure for printing a document.

The user can print a document after completing it. All word processors provide the facility of printing documents. The following procedure is used to print a document:

1. Select **File > Print** from menu bar or press **CTRL+P**. **Print** dialog box will appear.

Print dialog box contains different option about printing as follows:

- **Name:** It indicates the printer that is used for printing the document.
- **Page range:** It is used to specify the pages to be printed. The **All** option button is used to print all pages, **Current** page option is used to print current page and **Pages** option is used to specify the page numbers to be printed.
- **Number of copies:** It is used to specify the number of copies to be printed.



2. Select the required options and click **OK** button. The document will be printed according to the specified options.

Q. What is clipboard? Explain usage of clipboard

Clipboard is used to temporarily store the information that has been cut or copied. Text can be moved from one location to another in a document. When the option of **cut** is used, the text is stored on the **Clipboard**. The text is erased from its original location. It can be pasted from **Clipboard** to another location.

Text can be moved from one location to another in the document with **Copy** option. When the option of **copy** is used, the text is stored on the **Clipboard**. The text is not erased from its original location. It can be pasted from **Clipboard** to another location. The options of **Cut** and **Copy** are available in **Edit** menu.

Q. Briefly describe the use of text boxes in MS Word.

Text box is a rectangular box that is used to enter text or image. It can be moved around the page easily. It is free of usual constraints of paragraphs and margins etc. MS Word provides the facility to resize and place text boxes easily and flexibly. The user can apply borders & shading to text boxes and rotate the orientation of text boxes etc.

The following procedure is used to add text box in MS Word:

- Click **Insert > Text Box** OR click **Text Box** icon from **Drawing** toolbar. The shape of cursor will change to +.
- Move the cursor to the place where the text box is to be placed and drag the mouse while pressing the left mouse button. The text box will be created.

Q. Which types of graphics can be used in MS Word? Explain the procedure to insert graphic.

Graphics are frequently used in word processing. Almost all word processors provide the facility to use graphics. MS Word provides many tools to manipulate graphics.

There are two types of graphics that can be used MS Word:

- **Bitmap Graphics:** These graphics consists of pixels. Bitmap graphics can be considered as painted pictures.
- **Vector Graphics:** These graphics consists of lines and curves. Vector graphics can be considered as drawings.

The following procedure is used to insert graphics in MS Word:

- Place the cursor where the graphic is to be inserted.
- Select **Insert > Picture** from menu bar. It displays the following basic options:

  Clip Art...
  From File...
  From Scanner or Camera...
- Select any option to insert a graphic in the document.

MS Word also provides a picture toolbar to manipulate pictures. The toolbar can be displayed from **View > Toolbars > Picture**. The toolbar contains different options for manipulating pictures.

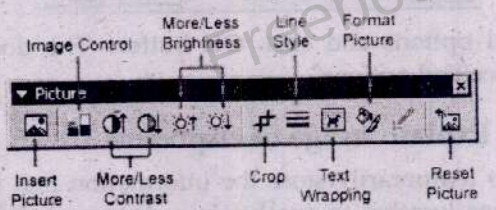


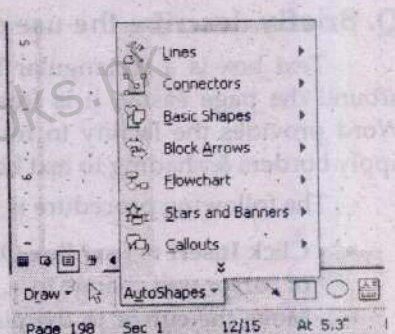
Figure: Picture Toolbar

Q. What are AutoShapes? What is the procedure to insert AutoShapes in MS Word?

MS Word also provides basic shapes like rectangle and circle to insert in the document. These are known as AutoShapes. These shapes are available in **Drawing** toolbar. The AutoShapes toolbar on Drawing toolbar is used to draw different geomatrical shapes like arrows, flow chart symbols, stars and banners etc.

The procedure to insert **AutoShape** in a document is as follows:

1. Click **View > Toolbars > Drawing** from menu bar to display **Drawing** toolbar.
2. Click **AutoShapes** on **Drawing** toolbar. It displays different options for **AutoShapes**.
3. Select any AutoShape to insert in the document. The cursor will change to +.
4. Drag the mouse to draw the selected AutoShape.

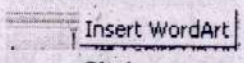


Q. Write a short note on Word Art.

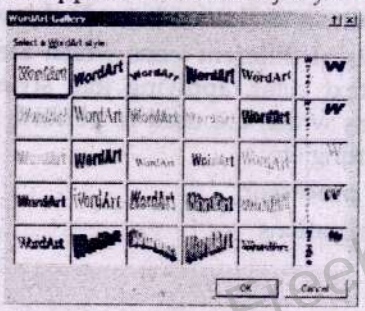
WordArt is a feature of Microsoft Word programs. It is used to create stylish text in a variety of shapes. It provides the facility of stretching, coloring and shading text. It converts text into graphics. WordArt image is similar to other graphics in the document. It can be resized, moved, copied etc.

The following procedure is used to add Word Art in the document:

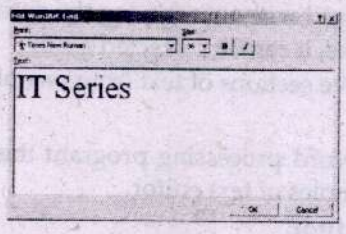
1. Click **Insert > Picture > WordArt** OR click **WordArt** button in **Drawing** toolbar.



2. The **WordArt Gallery** will appear. Click on any style from **WordArt Gallery**.



3. Click **OK**. The **Edit WordArt Text** dialog box will appear.

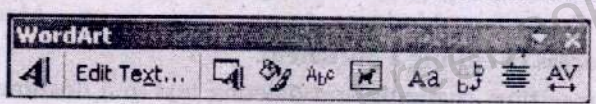


4. Type any text in the box and click **OK**. The WordArt will appear in the document.

IT Series

The following procedure is used to edit a WordArt:

1. Select the WordArt in the document. The WordArt toolbar will appear automatically.



2. Click on **Edit Text...** option on toolbar. **Edit WordArt Text** dialog box will appear.
3. Change the text in the box and click **OK**. The **WordArt** will be edited.

Short Questions

Q.1. Define word processor.

Word processor is a type of application software. It provides useful tools for creating all kinds of text documents. Word processor can manipulate text. It can also be used to add images, sounds, charts and graphics in documents.

Q.2. Describe Microsoft Word.

MS Word is commonly used word processing software. It provides different facilities to prepare documents. It can be used to prepare different documents easily such as letters, applications, and reports. Documents may include simple text, numeric data and graphics.

Q.3. What do the letters WYSIWYG stand for?

The letters WYSIWYG stand for What You See Is What You Get.

Q.4. Distinguish between formatting toolbar and standard toolbar.

Formatting toolbar consists of different icons which are used to format a document. Formatting includes changing text color, applying font style and font size etc. Standard toolbar consists of different icons which are used to perform different tasks on documents such as saving, opening and printing etc.

Q.5. List out some uses of word processor.

- Preparing Letters & Applications
- Preparing Resumes
- Preparing Notices

Q.6. List some advantages of word processor over typewriter.

- A document can be changed without retyping the entire document.
- If there is a typing mistake, it can be corrected easily.
- Word processors can move sections of text from one place to another easily.

Q.7. What is text editor?

A text editor is a simple word processing program that is used to type and edit text. Word Pad and Notepad are examples of text editor.

Q.8. List some features of text editor.

- Text editor is used to insert text anywhere in the document.
- Text editor is used to delete characters, words, lines or pages as easily.
- Text editor provides the facility to move text from one place to another

Q.9. List some important features of full-features word processor.

- File management.
- Header, Footer and page Numbering
- Table of Contents and Indexes
- Font Specification
- Spell Checker
- Mail Merge

Q.10. Describe the process of editing a document.

The process of inserting, changing and deleting text in a document is called editing a document. Similarly, the process of making changes in pictures is called graphics editing.

Q.11. Distinguish between Cut and Copy.

Cut command moves text from one place to another. The selected text is removed from its position and is copied to clipboard. Copy command copies the text from one place to another. The selected text is not removed from its position and is also copied to clipboard.

Q.12. State the use of clipboard in MS Word.

Clipboard is used to temporarily store the information that has been *cut* or *copied*. The options of **Cut** and **Copy** are available in **Edit** menu or **Standard** toolbar. Clipboard can store twenty four items.

Q.13. Explain the process of formatting in MS Word.

The process of defining the appearance of a document is called **formatting.** It includes different tasks such as changing font and font size of the text, applying border and shadings.

Q.14. Differentiate between line spacing and paragraph spacing?

The white space between two adjacent lines is called line spacing. Line spacing can be changed to increase the readability of text in a paragraph. The white space before and after a paragraph is called paragraph spacing.

Q.15. Describe alignment.

Alignment is the position of text with respect to the document's left and right margins. Text can be aligned left, center, right or justified.

Q.16. Define Font and its use.

Appearance of text in document is called font or typeface. You can change font of all or selected text to improve readability. Fonts are used to create text of different styles and sizes.

Q.17. Describe paragraph formatting.

Formatting that is applied to a complete paragraph is called paragraph formatting. Important paragraph formatting include text alignment, indentation, line spacing and Bullets and Numbering.

Q.18. Describe character formatting.

The formatting that is applied to an individual character is called character formatting. Important character formatting are typeface, font size, color, font style and character spacing.

Q.19. What is Page formatting?

Page formatting is the layout of the page when it is printed on a printer. It includes page size, page orientation, page margins, headers and footer etc. Page formatting is defined in page setup dialog box.

Q.20. Define paragraph indentation.

Indentation is the amount of space from the page margin applied at start of paragraph.

Q.21. Differentiate between alignment and indent in MS Word.

Alignment is the position of text on the page. Indent is the distance between the paragraph and page margins. It is used to make the paragraph prominent.

Q.22. State the meaning of default.

It refers to a standard setting determined by Microsoft and is used unless you change it; for example, the default top margin is one inch

Q.23. What is column?

Columns are very effective format for certain types of documents. Presenting text in columns is a powerful feature of MS Word. It is every easy to make column of the text. MS Word can arrange text in two or more columns like a newspaper or magazine.

Q.24. Define Insertion point.

A blinking vertical line that shows current location in the document or in a dialog box text box.

Q.25. Define Header and Footer in MS Word.

Header is used to display text or image on the top of each page. Footer is used to display text or image on the bottom of each page.

Q.26. State the use of Page Setup dialog.

The Page Setup dialog box is used to change the margin settings and layout of a document. It is also used to set paper size and the paper source for the printer.

Q.27. What is Mail Merge?

It is used to merge text from one file into another file. It is very useful to generate many files that have same format but different data. Generating mailing labels is an example of using merges.

Q.28. Distinguish between Save and Save As options.

Save command saves the document on the disk on first use. If it is used again, it updates the file if there were any changes. Save As command is used to save a copy of the document with difference name or at different location.

Q.29. Explain the use of Undo and Redo commands.

Undo command is used to remove the effect of the last action or number of actions. If there is any error in typing or some text is deleted by chance, you can use Undo command. Redo command is used to remove the effect of Undo command.

Q.30. How does Insert mode differ from Overtype mode?

Insert mode is used to insert text in the existing document. When user types a character, the existing character move to the right side. In overtype mode, the new character replaces the existing characters.

Q.31. Differentiate between Delete and Backspace key.

The delete key erases the character on the right side of the cursor. The backspace key erases the character on the left side of the cursor.

Q.32. Write the shortcut key to print a document.

The shortcut key to print a document is CTRL+P.

Q.33. Define table.

A table consists of columns and rows. The cells are formed where columns and rows intersect each other. The cell contains data or information. Tables can be used to arrange text and graphics.

Multiple Choice

1. **Which of the following is popular full-featured word processor?**
   a. MS Word b. Word pad c. Note pad d. All
2. **A word processor can:**
   a. Copy text b. Insert text c. Find and replace text d. All
3. **Word processing programs are used to create:**
   a. Reports b. Memos and letters c. Envelopes and labels d. All
4. **Word processing includes the process of:**
   a. Entering text b. Editing text c. Formatting document d. All

5. **Most modern word processors allow users to control the formats of:**
   a. Individual characters b. Paragraphs c. Complete documents d. All
6. **A feature commonly available with word processors is:**
   a. Spell checker b. Automatic footnoting c. Multicolumn tables d. All
7. **The tool used to find a similar or alternative word in a document is called:**
   a. Finder b. Thesaurus c. Dictionary d. Style checker
8. **A tool that allows you to generate form letters is called:**
   a. Mail merge b. Grammar Ready c. Mail Ready d. Letter writer
9. **The symbol that shows where the next character will be typed is called:**
   a. Mouse symbol. b. Character typing locator. c. Insertion point d. Scroll
10. **The shape of the insertion point symbol is:**
    a. Arrow. b. Vertical line. c. Horizontal line. d. Large circle
11. **When starting Word, the default document window name is:**
    a. Document1 b. File1 c. WPD1 d. Word1
12. **To edit text in a document, you may use the**
    a. Delete key b. Backspace key c. Cut and paste feature d. All
13. **Which of the following feature enables you to reverse the changes you have made to the document?**
    a. WYSIWYG b. Redo c. Undo d. GUI
14. **The extension of MS-Word file is:**
    a. wrd b. xls c. jpg d. doc
15. **The process of moving up or down in a word processing document is called:**
    a. Line movement b. Word wrap c. Pull-down d. Scrolling
16. **Which of the following keys is used to delete characters in a document?**
    a. Backspace b. Delete c. Both Backspace and Delete d. None
17. **Deleting a character to the right of the cursor is accomplished by pressing the:**
    a. Del key. b. Backspace key. c. End key. d. Ctrl+Del keys.
18. **Deleting a character to the left of the cursor is accomplished by pressing the:**
    a. Del key. b. Backspace key. c. Home key. d. Ctrl+Tab keys.
19. **Clipboard stores:**
    a. Entered text b. Copied text c. Deleted text d. Repeated text
20. **Pressing the Ins key will:**
    a. Insert a character into the document. b. Toggle between Undo and Redo.
    c. Toggle between insertion and overtype mode d. To insert image in document
21. **A set of buttons that invoke commands in a word processing document is called:**
    a. Menu. b. Button list. c. Dialog. d. Toolbar
22. **The term that defines the size and style of a typeface is:**
    a. Point b. font c. character d. size
23. **A font that is embellished with fine lines at the end of each character is called:**
    a. Decorated b. French c. serif d. sans-serif
24. **A font that is not embellished with fine lines at the end of each character is called:**
    a. European b. American c. serif d. sans serif
25. **A special part of memory to temporarily hold information for later use is called:**
    a. ROM b. Clipboard c. desktop d. CRAMS

26. **This command can be used to move text from one document to another.**
a. Replace b. Edit c. Format d. Cut-and-Paste

27. **What command is used to move selected text to another part of a document?**
a. Copy-and-Position b. Drag-and-Drop
c. Find-and-Replace d. both a and b are correct

28. **The general term that refers to the setting of margins, tab positions, text justification, vertical and horizontal centering, and line spacing is:**
a. Tool. b. Layout. c. Format. d. Setup.

29. **Times New Roman is an example of a:**
a. Serif font. b. Sans serif font.
c. Three-dimensional font. d. Boldface font.

30. **The ability to show the particular page number for each page in a word processing document is called:**
a. Numeric analysis. b. Page setup. c. Pagination. d. Page breaking.

31. **The sizes of characters to be printed are measured by:**
a. Inches. b. Points. c. Weight. d. Degrees.

32. **Paragraph formats include**
a. Tabs b. Alignment c. Indentations d. All

33. **Which of the following is an example of a font style?**
a. Bold b. 12 pt c. Helvetica d. All

34. **Font effects include:**
a. Strikethrough b. Shadow c. Outline d. All

35. **Which of the following is an example of a font weight?**
a. Bold b. 12 pt c. Helvetica d. Italic

36. **The number of personal computer that have word processor installed is about:**
a. 10% b. 50% c. 80% d. 90%

37. **Entering and editing text can be done most efficiently using a:**
a. Spreadsheet. b. Desktop publishing program.
c. Typewriter. d. Word processing program

38. **A font is described by its:**
a. Typeface. b. Height. c. Presentation attributes. d. All.

39. **The name of the document is displayed:**
a. Menu Bar b. Title bar c. Status bar d. Scrollbar

40. **The Word window has many common elements of a typical window, such as a:**
a. Title bar b. Menu bar c. Borders d. All

41. **Area in which text is entered, manipulated & viewed is called:**
a. Text area b. Documentation area c. Document window d. Window

42. **Which mode replaces the existing text?**
a. Overtype b. Replace c. Insert mode d. Change

43. **The Redo command**
a. Appears on the Standard toolbar b. Restores the last action that was undone
c. Both a and b d. None of the above

44. **Feature of Word that lets you change font color, size, style etc. is called:**
a. Styles b. Font c. Composing d. Formatting

45. A feature in Word that lets you divide page in portions is called:
a. Table b. Columns c. Rows d. None
46. In which of following ways text can't be aligned:
a. Top b. Left c. Right d. Center
47. Amount of vertical space between lines of text is determined by:
a. Paragraph spacing b. Word spacing c. Line spacing d. Text spacing
48. White space around printed page is called:
a. Margin area b. White area c. Cover area d. Blank area
49. Indention in Word is used to:
a. Make the text readable b. Change the paragraph color
c. Apply border around text d. Change line spacing
50. Which of the following cannot be set using the Format command?
a. Line spacing b. Margins c. Tabs and indents d. Alignment
51. Which of the following is/are set using the Format Paragraph command?
a. Line spacing b. indents c. Margins d. Both line spacing and indents
52. Page setup option is present in which menu?
a. Format b. Insert c. Edit d. File
53. Direction of paper in printing is referred to as:
a. Directionnel position b. Orientation c. Page style c. Page position
54. How many orientation types are available?
a. Four b. Two c. Five d. One
55. The normal orientation for printing is:
a. Portrait b. Vertical c. Landscape d. Horizontal
56. Page numbers can be inserted from menu bar using:
a. Insert menu b. Format menu c. Window menu d. File menu
57. Header & footer option can be used from which menu?
a. Tools b. Insert c. Edit d. View
58. Tables allow text to be displayed in:
a. ows & columns b. Graphic file c. Newspaper-type columns d. Row cell
59. Tables are used to display:
a. Numeric information b. Text c. Graphics d. All
60. You can insert multiple columns in Table menu by Choosing Insert & then:
a. Columns at right or left of table b. Columns at side
c. Column to left or Column to right d. Columns insertion
61. Drawing Objects includes:
a. Auto shapes b. Curves c. Word Art d. All
62. Which of the following keyboard shortcuts is used to change the case?
a. Ctrl+F3 b. Shitf+F3 c. Alt+F3 d. Ctrl+Shift+F3
63. Which of the following can be used to launch the word Art
a. status bar b. Ruler c. Standard toolbar d. Drawing toolbar
64. Which function key is used for checking spelling and grammar in word?
a. F1 b. F2 c. F7 d. F12
65. Menus are a part of the:
a. Hardware b. Status Bar c. Monitor d. User interface

66. For help_____ function key is used.
a. F1 b. F2 c. F3 d. F7

Answers

1.	a	2.	d	3.	d	4.	d	5.	d	6.	d
7.	b	8.	a	9.	c	10.	b	11.	a	12.	d
13.	c	14.	d	15.	d	16.	c	17.	a	18.	b
19.	b	20.	c	21.	d	22.	b	23.	c	24.	d
25.	b	26.	d	27.	b	28.	c	29.	a	30.	c
31.	b	32.	d	33.	a	34.	d	35.	a	36.	d
37.	d	38.	d	39.	b	40.	d	41.	c	42.	a
43.	c	44.	d	45.	b	46.	a	47.	c	48.	a
49.	a	50.	b	51.	d	52.	d	53.	b	54.	b
55.	a	56.	b	57.	d	58.	a	59.	d	60.	c
61.	d	62.	c	63.	d	64.	c	65.	d	66.	a

Fill in the Blanks

1. The bar which contains the name of active application is known as_____.
2. WYSIWYG stands for_____.
3. The appearance or shape of a character is referred to as_____.
4. The page orientation my be _____ or _____.
5. _____ graphics can be thought of a painted picture.
6. _____ automatically moves to next line when you have filled one line with text.
7. A _____ is a character or word that represents a series of keystrokes.
8. A built-in_____ allows you to search for synonyms.
9. A_____ shows you the positing of text, tabs, margins, indents and other elements on the page.
10. In case of_____ mode the newly entered text is written over the existing text.

Answers

1. Title bar	2. What You See Is What You Get	
3. Font	4. landscape, portrait	5. Bitmap
6. Word wrap	7. Macro	8. Thesaurus
9. Ruler	10. Overtype	

True / False

1. Word processor is just an electronic typewriter.
2. The bar containing the drop down menus is called scrollbar.
3. Font face is shown on formatting toolbar.
4. Footnote appears at the bottom of every page.
5. The interface represents the way through which you can interact with the word processing software.
6. In insertion mode, the newly entered text is placed at the current position of the cursor.
7. Scan—serif fonts have extra decorative lines at the end of the strokes that make up each character.
8. Alignment refers to the orientation of the lines of a paragraph with respect to the margins.
9. Line spacing refers to amount of space between paragraphs.
10. Clipboard is measured in Microsoft Word.

Answers

1.	F	2.	F	3.	T	4.	F	5.	T
6.	T	7.	F	8.	T	9.	F	10.	F

Chapter 9

Spreadsheet Software

Q. What is spreadsheet? Write its application, advantages & disadvantages.

Spreadsheet

Spreadsheet program is used for calculations. It provides worksheets to enter data. A worksheet is a collection of rows and columns. It allows you to make different calculations using formulas and built-in functions. We can also display our data using charts and figures.

Application of Spreadsheet

Some important applications of spreadsheet program are as follows:

- It can be used by corporations to track profit and losses
- Economists can generate growth graphs of country's economy
- Statisticians can calculate probability of crashing the market
- Women can manage their household budgets

Advantages

Computerized spreadsheets can calculate data easily, accurately and efficiently. Large quantities of numbers can be added, subtracted, multiplied and divided. Revised calculations are performed automatically when new information is inserted in existing spreadsheet.

- It increases the ease and speed of calculating.
- It makes it easy to modify information and recalculate automatically.
- It displays numeric data as a chart or graphs.
- It incorporates numeric data into another software application.

Disadvantages

- Spreadsheet program cannot process a large volume of data quickly.
- It does not provide much programming facilities.

Q. Discuss the basic feature of spreadsheet software

Spreadsheet software provides many features. Some are as follows:

1. Grid of Row and Columns

The spreadsheet is a grid of rows and columns. Each row is assigned a number and each column is assigned a letter. The intersection of row and column is called cell. Cells are identified by the combination of their column letter and row number.

For example, fifth cell in the second column is known as cell B5. This is known as the **cell address** or **cell coordinates**. A cell contains labels or values. A label is text entry such as "Gross salary". Values can be number, date, formula or formula result.

2. Formulas

The formula performs calculations on the data in spreadsheet. It displays the resulting value in the cell containing the formula.

3. Built-in Functions

Spreadsheet has many built-in functions. Functions can perform different types of calculations. Lengthy calculations can be applied on worksheet easily by using functions.

4. Commands

Commands are used to manipulate the worksheet or its contents

5. Text Manipulation

Some simple text manipulation can also be performed.

6. Printing

Spreadsheet provides printing facility. You can print your documents to get a hard copy. Printing can be of whole document or of any required range.

Q. Explain the general interface of spreadsheet software. Also explain 3-D sheet.

Following is a brief description of different elements of a spreadsheet interface:

1. Worksheet

The worksheet is where data is entered. Spreadsheet consists of columns and rows to enter data.

2. Workbook

Workbook is a group of worksheets saved together as one file. By default a workbook contains 3 worksheets.

3. Cell

The intersection of row and column is called cell. A cell holds data. Cells may contain text, numbers, graphical patterns or formulas.

4. Cell Address

Cells are identified by the combination of column letter and row number. The fifth cell in second column is known as cell B5. This is known as the **cell's address** or cell coordinates.

5. Column and Row Headings

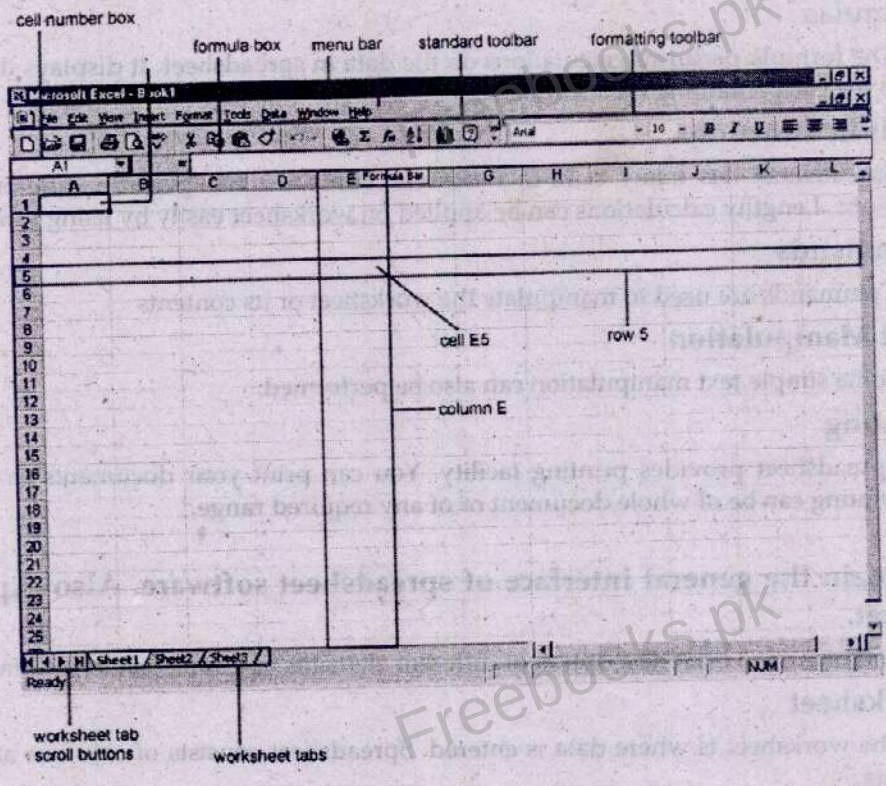
The text that appears at the top of column is called **column headings**. Column headings represent the names of the columns. The text that appears on the left of row is called **row headings**. Row headings represent the names of the rows.

6. Active Cell

Active cell is the in which data is entered or edited at a given time.

7. Title Bar

Title bar is located at the very top of the screen. Spreadsheet displays the name of the current workbook on it.



8. Menu Bar

Menu is a collection of useful commands displayed on the top of screen.

9. Toolbars

Toolbars are shortcuts to menu commands. Toolbars are generally located just below the menu bar. Toolbars consist of icons that act as shortcuts to the commands.

10. Formula Bar

The **formula bar** displays the location of the active cell and the value or formula used in the active cell.

11. Sheet Tabs

Sheet tabs at the bottom of the workbook are used to move from one sheet to another in a workbook.

12. The Status Bar

At the bottom of the spreadsheet interface is the **status bar.** This bar displays information about a command, a toolbar icon or an operation in progress.

13. 3D Sheet

Early spreadsheet programs provided only one worksheet at a time. The workbook could contain just one worksheet. The new spreadsheets are called **3D worksheet**. A 3D worksheet is like a pad of worksheets. It is due to this feature that data in one worksheet can be used in the calculations of another worksheet of same or different workbook.

Q. How is data entered in a worksheet?

Cell is the basic unit for entering data in a worksheet. When a cell is selected, the user can enter data in the cell by simply typing on the keyboard. Formula bar can also be used to enter data in the selected cell.

The following procedure can be used to enter data in a cell:

1. Select the cell in which data is to be entered by clicking on it.
2. Type any data from keyboard.
3. Press **Enter** key to complete data entry.

Q. Discuss different types of data in Excel.

Different types of data in Excel are as follows:

1. Label

Labels are used to identify a value or series of values. Labels are helpful in making the worksheets meaningful. Formula cannot be applied on labels.

2. Values

Values are usually numeric data typed in different cells. The values can be whole numbers, decimals, negative numbers, currency and scientific notations. Values can be used in formulas and function. Some examples of values are 50, 25.33, -12 etc.

3. Dates

Dates are values that can be used in calculations to create new dates or calculate time intervals. An example of date is 12/07/2005.

4. Formula

A formula is an expression that produces some values. Formula may be very simple or extremely complex. A formula begins with an equal sign (=) followed by one or more values to calculate.

Q. Every cell in a worksheet has a reference number. How is it used in calculations?

Cell Reference

Each cell in a worksheet has a reference number. A cell reference in a formula refers to the contents of referenced cell. It increases the flexibility of the formula. If the contents of the referenced cell are changed, the result of formula is automatically changed.

A cell reference consists of column name and row number. For example, B20 refers to row number 20 in column B. The formula **=G8+Y10** will add the values of G8 and Y10.

Range

If the formula uses continuous cells, all cells can be referenced as **range**. The range is specified as follows:

- address of the first cell : address of the last cell

For example, the cells D3, E3, F3, G3 can be referenced as D3:G3.

Q. Differentiate between relative & absolute referencing.

Relative Referencing

Referencing cells by their column and row labels such as "A1" is called **relative referencing**. If a formula containing relative referencing is copied from one cell to another, spreadsheet changes cell addresses relative to the new cell address.

Example

If a simple addition formula in cell C1 i.e. = (A1+B1) is copied to cell C2, the formula will change to = (A2+B2) to reflect the new row.

Absolute Referencing

Referencing cells by column and row labels along with "$" such as "$A1" is called **absolute referencing**. If a formula containing absolute referencing is copied from one cell to another, Excel does not change cell addresses.

Example

In the previous example, the formula in cell C1 would read =(A1+B1) if the value of cell C2 should be the sum of cells A1 and B1. Both the column and row of both cells are absolute and will not changed when copied.

Q. What do you understand by named ranges? Can it be helpful in simplifying the worksheet?

Named Ranges are the names that are defined to represent a cell or cell range on a worksheet. These range names can be used in formulas instead of cell addresses or ranges. They also make it easier to use, maintain and understand the formula in the worksheet.

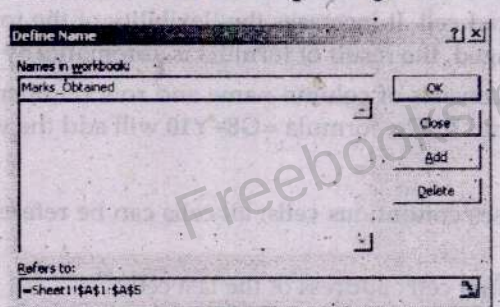
Exmaple

The formula =C10*100/C8 calcualte the the percentage of marks. After giving names to cell, this can be expressed as = Marks_Obtained*100/Total_Marks

Defining Named Range

The following procedure is used to define a named range:

1. Select the cell or range of cells.
2. Select **Insert > Name** from menu bar. A submenu will appear.
3. Select Define from submenu. The following dialog box will appear:



4. Enter a name for the range in **Names in workbook** box.
5. Click **OK**. The named range will be defined.

Q. Why and how two worksheets are linked?

Two worksheets are linked if one worksheet is use the value from another worksheet. A formula in a worksheet may use value from a cell in another worksheet of same workbook. In this case, the name of second worksheet is used with cell address. For example, the following format is used to access the value of a cell in another worksheet:

SheetName!CellAddress

The following formula will add the value of cell A1 of current worksheet and cell A2 in the second worksheet named Sheet2:

=A1+Sheet2!A2

Q. Explain formula in Excel. How it can be used?

A **formula** is an expression that produces some values. The values, cell references and built-in functions can be used in formulas. Formulas must begin with an equal sign "=". A formula can be used to calculate the grade of students or it can be used to find the sum of multiple values etc.

A formula is written in a cell. The cell in which the formula is written displays the result of formula. The formula is displayed in formula bar when the cell containing a formula is activated.

Entering Formula in Excel

1. Click on the empty cell that will display the result of the formula.
2. Type the equal sign (=).
3. Type formula without any spaces (e.g., A1+A2+A3+A4) and press the **Enter** key. The result will appear in the cell while the formula will be displayed in the **Formula Bar**.
4. If you change any value of a cell referenced in a formula, the formula will automatically recalculate and display the new value.

Q. What is function? List some important functions of Excel.

Functions are built-in formulas that are used to perform complicated calculations. Functions can be a more efficient way of performing mathematical operations than formulas.

Example

For example, the following formula can be used to add values of cells D1 through D10:

=D1+D2+D3+D4+D5+D6+D7+D8+D9+D10

The SUM function can be used to perform this operation in a shorter way as follows:

=SUM (D1:D10)

Important Functions

Some important functions are as follows:

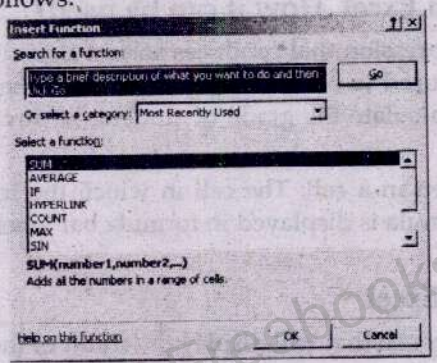
Function	Example	Description
SUM	=SUM (A1:100)	Finds the sum of cells A1 through A100
AVERAGE	=AVERAGE (B1:B10)	Finds the average of cells B1 through B10

MAX	=MAX (C1:C100)	Highest number from cells C1 to C100
MIN	=MIN (D1:D100)	Lowest number from cells D1 to D100
SQRT	=SQRT (D10)	Square root of the value in cell D10
TODAY	=TODAY ()	Current date

Q. What is the procedure for entering function?

The following procedure is used to enter a function in a cell:

1. Activate the cell where the function is to be entered.
2. Click **Function Wizard** button on **Standard** toolbar f_x. The Insert Function dialog box will appear as follows:



3. Select any function from **Select a function** box.
4. Click **OK**. The function wizard will appear to get function arguments. The result of the function will appear at the end of function wizard.

Q. What is difference between worksheet and workbook?

Worksheet

The worksheet is the place where the user enters all data. A worksheet consists of columns and rows. There are 256 columns and 65,536 rows in a worksheet. Rows are labeled by numbers (1, 2, 3...) and columns are labeled with letters (A, B, C etc.). Cells are then labeled with both the column letter(s) and row number in that order.

Workbook

A workbook is a group of worksheets saved together as one file. Each workbook in Excel contains 3 worksheets by default. These are called Sheet1, Sheet2 and Sheet3. When you save a workbook, you are also saving changes made to each worksheet in the workbook.

Q. What is difference between active cell and passive cell?

Active cell is the cell in which data is entered or edited at a given time. A cell must be activated before entering data. When a cell is active, a bold rectangle appears around it. The data in the active cell can also be inserted using formula bar.

A cell that is not currently selected is called **passive cell**. The data cannot be inserted or deleted in a passive cell.

Q. What is difference between word processor and spreadsheet?

Word Processor	Spreadsheet
1. Word processor provides the facility to create and edit documents.	1. Spreadsheet provides the facility of calculations.
2. The data in word processor is inserted in documents.	2. The data in spreadsheet is inserted in worksheets.
3. It provides no data validation facility.	3. It provides data validation facility.
4. It does not provide data analysis facility.	4. It provides data analysis facility such as filter, subtotal, pivot table and auditing.
5. It provides a small number of predefined functions to manipulate data.	5. It provides many predefined functions to manipulate data.
6. It does not provide the facility of automatic recalculating of data.	6. It provides the facility of recalculating data. The result changes automatically if the data is changed.
7. Conditional formatting is not available in word processors.	7. Spreadsheets provide the facility of conditional formatting. Format of data is changed when it meets a certain criteria.
8. Word processor is used to create letters, applications, memos and reports etc.	8. Spreadsheet is used to create salary sheets, home budgets and balance sheet.

Q. What is difference between function and formula?

Function	Formula
1. Function is predefined facility.	1. Formula is defined by the user.
2. Function is written in predefined syntax.	2. Formula is written according to the user requirements.
3. Function may require parameters.	3. Formula does not require parameters.
4. Function is identified by a particular name.	4. Formula has no particular name.
5. All functions are formulas.	5. All formulas are not functions.

Q. What is nested function? Give example.

A function within a function is called nested function. For example, if you want to calculate two different bonuses on the basis of average sales of a person, you will need to use nested function as follows:

IF (AVERAGE(A2:B2)>3000,500,100)

Here, Average is the inner function and IF is the outer function. In nested functions, inner functions executes first. Then outer functions are executed.

Q. What is a chart? How chart is created in Excel?

Charts allow you to present data entered into the worksheet in a visual format using a variety of graph types. Before you can make a chart, you must first enter data into a worksheet.

Creating Charts using Chart Wizard

The Chart Wizard brings you through the process of creating a chart by displaying a series of dialog boxes.

1. Enter the data into the worksheet and highlight all the cells that will be included in the chart including headers.
2. Click the **Chart Wizard** button on the standard toolbar to view the first **Chart Wizard** dialog box.
3. Choose the **Chart type** and the **Chart subtype** if necessary. Click **Next**.
4. Select the data range and click **Next**.
5. Enter the name of the chart and titles for the X- and Y-axes. Other options for the axes, grid lines, legend, data labels, and data table can be changed by clicking on the tabs. Press **Next** to move to the next set of options.
6. Click **As New Sheet** if the chart should be placed on a new, blank worksheet or select **As Object In** if the chart should be used in an existing sheet and select the worksheet from the drop-down menu.
7. Click **Finish** to create the chart.

Q. What is Align and Orient Cell Contents?

Text is aligned automatically on the left of the column and values on the right. This can be changed as required. Values formatted with the **Currency** or **Comma Style** formats override the alignment button options.

Align Left

The following procedure is used to left align the data in the cells of a spreadsheet:

1. Select the data with the mouse.
2. Click on align left button.

	A	B	C	D	E	F	G
3		1994	1995	1996	1997	1998	1999

Align Center

1. First select the data that you want to appear centered.
2. Click on the center button.

Un-centering Text

1. Select that same data.
2. Click on the center button again.

Align Right

1. First select the data that you want to appear right aligned.
2. Click on align right button.

	A	B	C	D	E	F	G
3		1994	1995	1996	1997	1998	1999

Q. What is Merge and Center? How it is applied

Merges and centers selected data across multiple cells. The merge and center functions are combined on this icon.

A	B	C
Marks		
10	20	30

1. Select the columns as seen below:

A	B	C
Marks		
10	20	30

2. Click on the merge and center icon  . The display will change to the one seen below:

A	B	C
	Marks	
10	20	30

Q. Write the procedure for rotating text.

This feature allows you to change the direction of the text.

1. Select the cell or range of cell you want to rotate.
2. On the **Format** menu, click **Cells**.
3. Click the **Alignment** tab. Under **Orientation**, Red Diamond will be at position 0 degrees.
4. Now click and drag the Red Diamond to the +45 degrees position.
5. Click on **OK** button to see the result.

Q. Write a procedure Wrapping Text in a Cell.

If you have text that appears in a single cell but you want to increase the height of that cell to accommodate all of the words, you can use the Wrap text option.

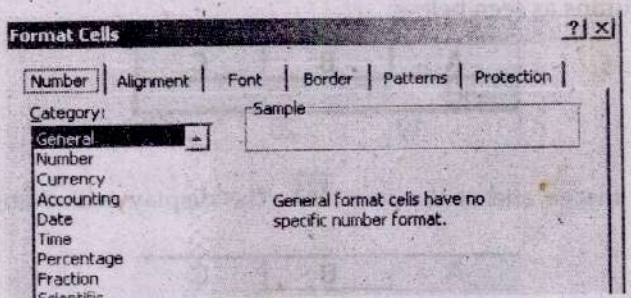
1. Select the cells that you want to apply Wrap text.
2. From the **Format** menu, select Cells…The **Format Cells** dialog box appears.
3. Select the Alignment tab.
4. Under **Text Control**, select Wrap text.
5. Click **OK**.

Unwrapping Text using Menu

1. Select the cell, which has wrapped text.
2. From the Format menu, select Cells...The Format Cells dialog box appears.
3. Under **Text Control**, deselect Wrap text.
4. Click **OK**.

Q. What is cell formatting?

The way data appears in a cell is known as **cell formatting**. The General format is the default format of a cell. General format displays data as it is entered in a cell. If the cell is not wide enough to display a long decimal number, General format rounds off the number. It uses scientific notation for large or small numbers. For example 0.0000000001 is displayed as 1E-10 in default column width. The cell format is applied from **Format Cells** dialog box as follows:



Q. What are different symbols used in custom format?

Each number format consists of four parts. The first part describes the positive number. The second part describes the negative numbers. The third part describes zero values. The fourth part describes text values.

Each part is separated from the other by a semicolon. It is nor necessary to specify all parts of the format. If two parts are specified, the first is used for positive numbers and zero values and the second is used for negative numbers. Text values use general format. If only one format is specified, all numbers use the same format.

The text values use general format as follows:

Symbol	Meaning	Example
0	It determines the number of digits to be displayed on either side of decimal number.	If the custom format is 0000 then 25 is displayed as 0025
#	It is similar to 0 character except that insignificant zeros are not displayed if the number has fewer digits than specified.	If custom format is #, ### then 7200 will be displayed as 7,200
?	It is also similar to the 0 character except that space is left for insignificant zero characters on either side of a decimal point	If the custom format is 0.??? and 16.545 and 2.4 are displayed vertically. The decimal point of 16.545 will become under the decimal point of 2.4
. Period	It indicates the number of digits to be displayed on the right of a decimal point. The cell display will round to the number of placeholders to the right of the decimal point in the format.	If the customer format is ###. 00 then 1.2 will be displayed as 1.20 and 58 will be displayed as 58.00

Q. Differentiate application window and document windows?

The window that contains **title bar, menu bar** and **toolbars** is called **application window**. It is used to open many documents at the same time.

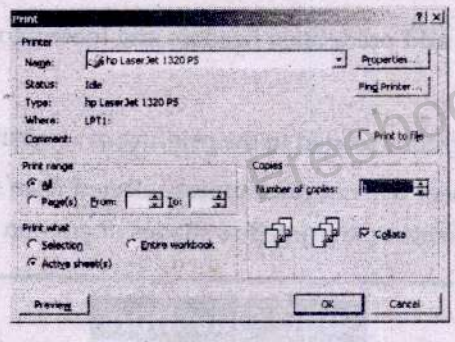
The window that contains single **workbook** of Excel is called **document window**. When the user opens a new workbook, it is opened in document window.

If the user closes application window, all documents windows are also closed. If user closes a document window, application window remains open.

Q. Write the procedure for printing a worksheet.

The process of printing a worksheet is different from printing a word document. The size of worksheet can be larger. The Print Preview option can be used to view the part of worksheet that will be printed. The following procedure is used to print a worksheet:

1. Click **Print** icon  on **Standard** toolbar. The **Print** dialogue box is displayed.



The important options of Print dialog box are as follows:

- **Printer:** It is used to select a printer from **Name** list box.
- **Print range:** It is used to select the range of printing. The user may print all pages or give a range of pages.
- **Copies:** It is used to specify the number of copies to be printed.

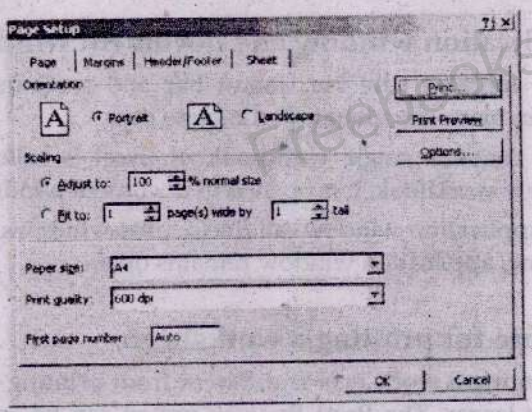
2. Select the desired options from **Print** dialog box.
3. Click **OK**. The worksheet will be printed.

Q. What is page set up? Explain various tabs of Page Setup dialog box.

The page setup is used to set page orientation, margins and header & footers. The page setup is used from **Page Setup** option of **File** menu. The Page Setup dialog box contains the following options:

Page Orientation

The page orientation option is used to select layout of the page for printing. It provides two options of **Landscape** and **Portrait**. The Scaling option is used to set the size of worksheet on the page.



Margins

The margins tab is used to change the top, bottom, left and right margins of the page.

Header/Footer

This option is used to add predefined headers and footers to the page.

Sheet

It contains different options related to the printing of worksheet. It includes:

- Gridlines of worksheet will not print unless selected from Page Setup.
- Colors used of worksheet are printed as shades of gray on a black and white printer.

Short Questions

Q.1. Define spreadsheet.

Spreadsheet program is used for calculations. It provides worksheets to enter data. A worksheet is a collection of rows and columns. It allows you to make different calculations using formulas and built-in functions. We can also display our data using charts and figures.

Q.2. List some applications of spreadsheet.

- It can be used by corporations to track profit and losses
- Economists can generate growth graphs of country's economy
- Women can manage their household budgets

Q.3. List three benefits of spreadsheet.

- It increases the ease and speed of calculations.
- It is easy to modify information and recalculate automatically.
- It provides facility to visually display numeric data as a chart or graph.

Q.4. Write the basic feature of spreadsheet software

Some important features are Grid of Row and Columns, Formulas, Built-in Functions, Commands, Text Manipulation and Printing.

Q.5. How are rows and columns identified in Excel?

Rows are identified by numbers and columns by letters.

Q.6. Define cell and how is it identified?

A cell is the intersection of a row and a column, and is named with the letter of the column and the number of the row.

Q.7. Give three possible cell contents.

A cell can contain a numeric value, an alphabetic value or a formula. The formula may refer to other values in different cells.

Q.8. Define worksheet.

Worksheet is where data is entered. It consists of columns and rows to enter data.

Q.9. What is cell and cell address?

The intersection of row and column is called cell. A cell holds data. Cells may contain text, numbers, graphical patterns or formulas. Cells are identified by combination of column letter and row number. The fifth cell in the second column is known as cell B5. This is known as the cell's address or cell coordinates.

Q.10. What is active cell of Excel?

Active cell is the cell where the cursor is blinking or which is selected.

Q.11. List different types of data in Excel.

Different types of data in Excel are Label, Values, Dates and Formula.

Q.12. What is Merge and Center option in Excel?

Merge and Center option merges and centers the selected data of multiple cells. The merge and center functions are combined on this icon.

Q.13. Explain number formats and how they affect the value of a number.

A number format changes the appearance of a number but does not change the value of a number. For example, if the number is 1.2345 and you apply a format with only two decimal places, Excel will round the number and display it as 1.23, but when Excel uses the number in a calculation, it uses 1.2345.

Q.14. What do you mean by Relative Referencing?

Calling cells by just their column and row labels such as "A1" is called relative referencing. If a formula containing relative referencing is copied from one cell to another, Excel changes cell addresses relative to the new cell address.

Q.15. Describe Absolute Referencing.

Calling cells by column and row labels along with "$" such as "$A1" is called absolute referencing. If a formula containing absolute referencing is copied from one cell to another, Excel does not change cell addresses.

Q.16. Differentiate between absolute and relative references.

If a formula containing relative referencing is copied from one cell to another, Excel changes cell addresses relative to the new cell address. If a formula containing absolute referencing is copied from one cell to another, Excel does not change cell addresses.

Define formula in Excel.

Formulas are the instructions that perform calculations on the sheet. A formula begins with equal sign (=) followed by one or more values to calculate.

Write the formula for calculating the average of cells B2 and B3.

The formula is = (B2+B3)/2

Q.19. Write a function that totals cells A1 through A5.

=sum(A1:A5)

Q.20. Why are parentheses important in formulas?

The expressions inside parentheses are performed before the other expressions. Parentheses are used to change the predefined operator precedence.

Q.21. Define functions in Excel?

Functions are built-in formulas that are used to perform complicated calculations. Functions are an efficient way of performing mathematical operations.

Q.22. Define function arguments.

Arguments are the values that are given to a function for calculations. Arguments are written in parenthesis after function name.

Q.23. Distinguish between formulas and functions.

Formula is a mathematical expression given by user to perform some calculations. Functions are predefined formulas for complicated calculations. Functions are more efficient than formulas. But formulas are more flexible.

Q.24. Write different ways to enter cell addresses and ranges in a formula.

The user can type, point or use the **Insert Function** dialog box to enter cell addresses and ranges in a formula.

Q.25. List any five functions of Spreadsheet.

Some important functions of Excel are CountIf, Concatenate, Average, Max, and Min.

Q.26. What are nested functions in Spreadsheet?

A function within a function is called nested function. In this case, the inner function is executed before the outer function.

Q.27. State the purpose of spreadsheet Charts.

Charts are used to present data in a visual format. Data is entered in worksheet before creating a chart

Q.28. What do you understand by named ranges?

Named Ranges are the names that are defined to represent a cell or cell range on a worksheet. Range names can further be used in formulas instead of cell addresses or ranges. They also make it easier to use, maintain and understand the formula in the worksheet.

Q.29. Differentiate between active cell and passive cell.

Active cell is the cell in which data is entered or edited at a given time. A cell must be activated before entering data. A cell that is not currently selected is called passive cell. The data cannot be inserted or deleted in a passive cell.

Q.30. Compare word processor and spreadsheet.

Word processor is a type of application that provides the facility to create and documents. Spreadsheet is a type of application that provides the facility of calculations. in word processor is inserted in documents. Data in spreadsheet is inserted in worksheet

Q.31. Differentiate between worksheet and workbook.

Worksheet is a place where the user enters all data. It consists of columns an There are 256 columns and 65536 rows in a worksheet. A workbook is a group of wc which are saved as one file. Each workbook in Excel contains 3 worksheets by defaul

Q.32. What is 3D sheet?

Early spreadsheet programs provided only one worksheet at a time. The workbook could contain just one worksheet. The new spreadsheets are called 3D worksheet. A 3D worksheet is like a pad of worksheets. It is due to this feature that data in one worksheet can be used in the calculations of another worksheet of same or different workbook.

Multiple Choice

1. **Which of the following is spreadsheet software?**
   a. LOTOUS 123 b. MS Excel c. Both a and b d. Neither a nor b
2. **Another name for an electronic spreadsheet is:**
   a. Workbook. b. Worksheet. c. Database. d. Document.
3. **By default, how many worksheets are present in Excel workbook?**
   a. 3 b. 4 c. 5 d. None
4. **The extension of MS-Excel file is:**
   a. wrd b. xls c. jpg d. doc
5. **Default name of first sheet in any workbook is:**
   a. One b. Sheet 1 c. Sheet one d. First sheet
6. **The title bar in MS-Excel displays the name of the:**
   a. Worksheet b. Workbook c. Formula d. Location
7. **Spreadsheet is a grid of:**
   a. Row b. Column c. Row and column d. None
8. **The horizontal dimension of a spreadsheet is called:**
   A. Dimension. b. Cell. c. Row. d. Column.
9. **The vertical dimension of a spreadsheet is called:**
   a. Field. b. Record c. Row d. Column
10. **The intersection between a row and a column is called:**
    a. Intersection. b. Cell c. Field d. Address
11. **Each cell in a spreadsheet has a unique:**
    a. Row b. Column c. Address d. Both a and b
12. **In a spreadsheet, columns are labeled:**
    a. By letters b. By Numbers c. By cell references d. None
13. **In a spreadsheet, rows are labeled:**
    a. By letters b. By Numbers c. By cell references d. None
14. **In electronic spreadsheets, alphanumeric combinations such as A5, B9, D15 are:**
    a. Row identifiers b. Cell addresses c. Formulas d. Functions
15. **A spreadsheet cell that is highlighted with a heavy border is a:**
    a. Active cell. b. Cell containing a formula. c. Locked cell. d. None

Which of the following is a correct cell address?
a. AA b. 25 c. 3B d. C5

Which of the following is a correct row address?
a. AA b. 25 c. 3B d. C5

18. **Which of the following is a correct column address?**
a. AA b. 25 c. 3B d. C5

19. **Each cell can contain a:**
a. Label b. Value c. Formula d. All

20. **The raw numbers used in a spreadsheet are called:**
a. Labels b. Values c. Formulas d. Calculations

21. **An entry in a spreadsheet cell representing wages or test scores is most likely a:**
a. Label b. Value c. Formula d. Calculation

22. **An entry in a spreadsheet cell like "Monthly Wages" or "Final Approval Rating" would most likely be a:**
a. Label b. Value c. Formula d. Calculation

23. **An entry in a spreadsheet cell like "=(B2+B3)/2" would be an example of:**
a. Label b. Value c. Formula d. Function

24. **The cell that contains a formula or function will show:**
a. Formula or function b. Cell's address c. Resulting display value d. None

25. **The symbols B2:E3 is known as:**
a. Range b. Mathematical formula
c. Display value of a function d. Cell address

26. **Which cell address will be included in the range C5:E7?**
a. C8 b. D6 c. E4 d. D9

27. **Which spreadsheet capability allows a pie chart to be generated from the data in spreadsheet cells?**
a. Decoration b. Data appearance c. Functions d. Charting

28. **Main window in spreadsheet is called:**
a. Work Book b. Work c. Account book d. Work sheet

29. **Which of the following is not an element of spreadsheet interface?**
a. Pencil work b. Active cell c. Menu bar d. Workbook

30. **A workbook is a group of:**
a. Many Rows b. Many Columns c. Worksheet d. Least No. of Columns

31. **What is the basic unit of a worksheet in which you enter text and numbers?**
a. A workbook b. A Column c. A Row d. A Cell

32. **A Block of cells called:**
a. Workbook b. Function c. Column d. Range

33. **A mathematical expression that is used to perform calculations on sheet are called:**
a. Cells b. Bars c. Formats d. Formulas

34. **In MS-Excel, formula begins with:**
a. > b. = c. == d. <

35. **The cell whose address is used in formula is called:**
a. Reference Cell b. Column Reference c. Sheet Reference d. Row Refe

36. **To call a cell by just their column and row labels (such as A1) is called:**
a. Mixed referencing b. Relative referencing
c. Advanced referencing d. Absolute referencing

37. The address of a cell in a formula which does not change when the formula is copied is called:
a. Mixed referencing b. Relative referencing
c. Advanced referencing d. Absolute referencing
38. Absolute reference are created by adding:
a. # Sign b. $ Sign c. % Sign d. @ Sign
39. A preprogrammed Formula:
a. Function b. Graph c. Range d. Cell
40. How many arguments does the SUM function require?
a. 1 b. 2 c. 3 d. 4
41. No. of arguments in SQRT function are
a. Two b. One c. Equal to range d. Equal to column no
42. For choosing built in function, option used is:
a. Paste function b. Function finder c. Built in function d. Defined function
43. Tool used for constructing a formulas is called:
a. Auditing toolbar b. Format painter c. Formula bar d. Filter
44. Which of the following is an absolute cell reference?
a. B$3 b. $B3 c. B3 d. B3
45. The cell range A3 through G3 should be keyed in as:
a. A3-G3. b. A3:G3. c. A3 . . . G3. d. A3 to G3.
46. Which one of the following is a formula that equates to 6:
a. 9 - 2 * 3 + 4 / 2 b. 1 + 2 * 3 - 8 / 2 c. 8 - 2 * 3 + 8 / 2 d. + 2 * 3 - 4 / 2
47. Which one of the following is the value of the formula: (7-3) * (1 + 6)/4
a. 7 b. 1.5 c. 2 d. 12
48. Which one of the following is the average of the quantities? 3, 2, 6, 2, and 7:
a. 6 b. 3 c. 4 d. 10
49. Which is true if the current or active cell is B4 and you pressed Enter key?
a. You will be in cell A1 b. You will be in cell B5
c. You will be in cell C5 d. You will be in cell B6
50. Which term is used for a predefined computational task in spreadsheet program?
a. Result b. Function c. Math operator d. Range
51. Which of the following is a properly written formula?
a. +D3 and D4 b. =D3&D4 c. +D4,D5 d. =D3+D4
52. SUM, AVERAGE, MIN, and MAX are examples of:
a. Calculations b. Formulas c. Functions d. Relative addressing
53. The function that is used to get the minimum value is called:
a. MAX b. Min c. Minimum d. Lower
54. The function that is used to get the Maximum value is called:
a. Highest b. Greater than c. Max d. Maximum
55. The function that is used to count the number of entries in the give range is called:
a. Length b. Counter c. Counting d. Count
The function that is used to get average is called:
a. Average b. Avg c. Medium d. Avrg

57. **The function that is used to get current system date:**
a. Now() b. Today() c. date() d. Date/time
58. **In Excel , each number format consist of:**
a. 2 part b. four parts c. 3 parts d. None
59. **If the custom format is 0000 then 12 will be displayed as:**
a. 0012 b. 00012 c. 12 d. 000012
60. **If the custom format is #,### then 1500 will be displayed as:**
a. 1,500 b, 15,00 c. 15,000 d. None
61. **If the custom format is ###.00 then 1.2 will be displayed as:**
a. 1.20 b. 12.0 c. 120.0 d. .120.0
62. **The first part of number format describe:**
a. Positive number b. negative number c. zero values d. Text values
63. **The second part of number format describe:**
a. Positive number b. negative number c. zero values d. Text values
64. **The third part of number format describe:**
a. Positive number b. negative number c. zero values d. Text values
65. **The fourth part of number format describe:**
a. Positive number b. negative number c. zero values d. Text values
66. **The command used to merge a number of selected cells into one cell is called:**
a. Merge b. Split c. Merge & Center d. One unit
67. **Page setup dialog box can be accessed through:**
a. File menu b. Edit menu c. View menu d. Window menu
68. **Page orientation is changed through:**
a. Paper dialog box b. Print dialog box c. Page setup dialog box d. Setup dialog box
69. **Graphic representation of data is named:**
a. Graphics b. Picture c. Chart d. Figure
70. **Which of the following is not an element of Chart:**
a. Plot area b. Fill handler c. Series d. Chart area
71. **In excel charts vertical axis is called:**
A. Z-axis b. Y-axis c. X-axis d. Slot
72. **When you create an Excel chart as a separate sheet, it is stored in :**
a. Current worksheet b Separate workbook c. Current book d. A or C
73. **Which Excel tool walks you through the steps necessary to create a chart?**
a. Graph Master b. Chart Wizard c. Chart Tool d. Graph Workshop
74. **To add a title to a chart and then change the title's format, you modify the:**
a. Data series. b. Series labels. c. Label options. d. Subtype.
75. **How will a cell be treated that has the entry: 3 computers?**
a. Number b. Text c. Both d. Numbers and text cannot be combine
76. **In the Format Cells dialog box, to rotate text you would select the:**
a. Number tab. b. Alignment tab c. Border tab. d. Font t
77. **The Wrap text feature is available under what menu?**
a. Edit b. Insert c. Format d. Toc
78. **Which is the faster way to change horizontal alignment in a document on?**
a. Align Left b. Center c. Align Right d. All

79. **When using the text orientation feature, you can change the direction of text to**
a. 10 degrees b. 45 degrees c. 90 degrees d. All

80. **The position of data in a cell is called;**
a. Direction b. Alignment c. Position d. Placement

81. **What happens if you type =A1+A2 into a worksheet cell?**
a. Data is interpreted as a label b. Excel interprets four characters as number
c. Data is interpreted as a date function d. Data is interpreted as a formula

82. **By default numbers in cell is aligned to:**
a. Left b. Right c. Downwards d. Upwards

83. **By default text in cell is aligned to:**
a. Left b. Right c. Downwards d. Upwards

84. **The actual working area of Microsoft Excel is:**
a. Workbook b. Worksheet c. Notesheet d. None

85. **The Cell range A3 to G3 should be keyed in as:**
a. A3-G3 b. A3:G3 c. A3...G3 d. A3 to G3

86. **Which of the following is an absolute cell reference?**
a. A1 b. A1$ c. A1 d. None

Answers

1. c	2. b	3. a	4. b	5. b	6. b
7. c	8. c	9. d	10. b	11. c	12. a
13. b	14. b	15. a	16. d	17. b	18. a
19. d	20. b	21. b	22. a	23. c	24. c
25. a	26. b	27. d	28. a	29. a	30. c
31. d	32. d	33. d	34. b	35. a	36. b
37. d	38. b	39. a	40. a	41. b	42. a
43. c	44. d	45. b	46. c	47. a	48. c
49. b	50. b	51. d	52. c	53. b	54. c
55. d	56. a	57. b	58. b	59. a	60. a
61. a	62. a	63. b	64. c	65. d	66. a
67. a	68. c	69. c	70. b	71. b	72. c
73. b	74. c	75. b	76. b	77. c	78. d
79. d	80. b	81. d	82. b	83. a	84. b
85. b	86. d				

Fill in the Blanks

1. For the custom format # #.000, the number 242.59 will appear as_____.
2. The Intersection of row and a column forms a _____.
3. In a spreadsheet,_____ are built in formula.
4. _____ are used to identify a value or series of values.
5. _____ are names that you define to represent a cell or cell range on a worksheet.
6. Calling cells by just their addresses (such as A1) is called_____.
7. A(n)_____ is indicated by a bold rectangular border.
8. _____ is a software for manipulating number.
9. A(n)_____ may contain multiple_____.
10. _____ is a placeholder that determines how many digits to display on either side of a decimal number.
11. LOTUS123 and MS Excel are examples of _____ software.

Answers

1. 242.590	2. Cell	3. functions
4. Labels	5. Named ranges	6. relative referencing
7. active cell	8. spreadsheet	9. workbook, worksheets
10. o	11. Spreadsheet	

True / False

1. Because Microsoft Excel is a spreadsheet, therefore it does not have a spellchecker component.
2. Functions can be more efficient way of performing mathematical operations than defining you own formulas.
3. A formula cannot manipulate labels.
4. Worksheet is the basic unit where the data is manipulated in a workbook.
5. Footnote can not be applied in spreadsheet software.
6. By default, the number as well as the text is aligned RIGHT in a cell.
7. A formula containing relative referencing is not copied exactly.
8. # is a place holder similar to the 0 character, except that space is left for insignificant zero character on either side of a decimal point.
9. a formula containing absolute referencing is not copied exactly.
10. In MS Excel, a worksheet can have maximum 65,536 rows.

Answers

1. F	2. T	3. T	4. F	5. F
6. F	7. T	8. F	9. F	10. T

Chapter 10

Fundamentals of the Internet

Q. What is Internet?

Internet is a huge collection of computers all over the world that are connected to one another. It is a global network of computers. These computers are connected through different telecommunications links like:

- Phone lines
- Fiber optics lines
- Satellites and wireless connections

Internet is used to find information stored on the computers called **hosts** or **servers**. These computers use a common protocol called TCP/IP for communication. **TCP/IP** stands for **Transmission Control Protocol / Internet Protocol**. Each computer connected to the Internet can act as host. A host computer provides information to the people.

People can find information about books, magazines, encyclopedia and other types of material on the Internet. They can get expert opinions on any topic. They can also communicate with world community on different subjects. The Internet has made this world a **global village**.

Q. Briefly describe the history of Internet.

The work on Internet was started in 1960s during the cold war of Russia and America. America wanted to communicate with its Armed Forces. A network of four computers was developed in the beginning. The project was handed over to **DARPA (Defense Advanced Research Project Agency)**. DARPA started connecting computers at different universities and defense companies.

Different universities and research organizations also started the development of their own networks to share information and data with other people. After a few years, all networks of universities and research organizations were connected by DARPA with each other to make the world's biggest network. This network is now known as Internet.

In 1989, all previous networks were replaced by **NSFNET** of **National Science Foundation**. The Internet facility was now available to common people.

Q. Briefly describe the working of the Internet.

The Internet is a collection of millions of computers. These computers are linked her on a computer network. The network is used by the computers to communicate with ther. A personal computer can be connected to Internet by using phone lines, DSL or odem. These devices communicate with the server of Internet service provider.

A computer in a university or business is usually connected with local area network using **network interface card (NIC)**. The business or university connects its LAN with an ISP using high-speed phone line like **T1 line**. A T1 line can handle approximately 1.5 million bits per second. A normal phone line with modem can handle 30,000 to 50,000 bits per second.

Internet service providers are connected to larger ISPs. The largest ISPs maintain fiber-optic backbones for an entire region. Backbones are connected through fiber optic lines, submarine cables or satellite links. In this way, every computer on the Internet is connected to every other computer.

Q. What do we mean by addressing schemes? How many addressing schemes are used on the Internet? Discuss briefly.

Addressing Scheme

Internet addresses are used to access different computers on the Internet. Each computer on the Internet has a unique address. This address is used to establish a connection with that computer. There are two types of addressing schemes on the Internet:

- IP Addressing
- DNS Addressing

1. IP Addressing

IP address is a unique number that refers to a computer connected to the Internet. IP stands for **Internet Protocol**. This address is a 32-bit number. It consists of four numbers separated by period. Each number is between 0 and 255. These numbers are known as octets. An example of IP address is 127.80.144.30.

A server on the Internet has a static IP address. It does not change very often. When a computer connects to the Internet, it also gets an IP address by the ISP. This IP address is used only during the session and is not static.

2. DNS Addressing

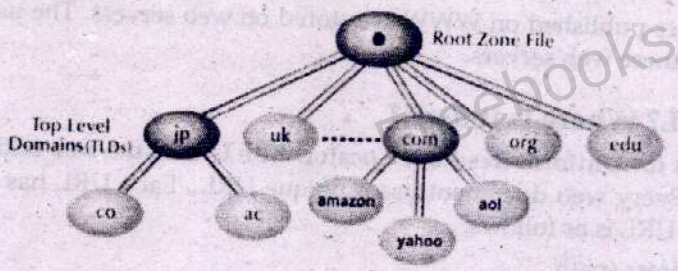
IP address is difficult to remember for the users. All servers on the Internet also have human-readable names. It is known as **domain name**. A domain name consists of text instead of number. It is easier to remember a domain name than IP address.

For example, **www.hotmail.com** is a permanent and human-readable name. It is easier to remember than IP address. It actually has two parts:

- Host name
- Domain

The domain represents the institution that uses the address. The domain names are called top-level domains. The top-level domains are as follows:

Domain	Type
com	Commercial organizations
edu	Educational institutions
gov	Government departments
mil	Military organizations
net	Network providers
org	Non-profit organizations



Internet Corporation for Assigned Names and Numbers (ICANN) is a group that assigns and controls the top-level domains. A method used to store domain names and corresponding IP addresses is called **domain name system (DNS)**.

Q. What is web browsing or web surfing? Write down the names of some popular web browsers.

Web Browsing

Web browsing is a process of searching information on the World Wide Web. A software used to search and view web pages is known as **web browser**. A web acts as an interface between the user and the Internet. It can display text and graphics.

The browser contacts a web server and sends a request for the required information. The web server searches for the requested web page and sends it to the web browser. The browser receives the information and then displays it on the user's computer.

Some popular web browsers are as follows:

- Internet Explorer
- Google Chrome
- Safari
- Mozilla Firefox
- Opera

Q. What is WWW?

WWW stands for **World Wide Web**. It is also called **Web**. It was launched in 1989 at the **European Particle Physics Laboratory** in Geneva. It provides the facility to publish information on the Internet. It is a collection of documents or web pages stored on computers permanently connected with Internet around the world.

A **web page** is a document that is written in **HTML**. These web pages are connected to one another using **hyperlinks**. The www uses **hypertext transfer protocol (http)** to link these web pages. Web pages are also known as **hypertext documents**. A web page may contain simple text, images and hyperlinks. Anyone can view web pages through a web browser.

A collection of related web pages is called **website**. Each website has a unique address. Websites are stored on a host computer on the Internet. These computers are known as **web server**. The process of launching a web page is called **publishing the page**.

Q. What is web server?

Web server is a computer that is used to store information for the users on the Internet. A web server is much faster and powerful than ordinary computer. It may be located anywhere in the world. The servers are connected to Internet 24 hours a day.

The web sites published on WWW are stored on web servers. The users read data and information from these web servers.

Q. What is URL? Where is it used?

URL stands for **Uniform Resource Locator**. The URL is the web address for any given web document. Every web document has a unique URL. Each URL has several parts. The general format of URL is as follows:

type://address/path

Here,

- **type** specifies the type of server on which the web page is hosted
- **address** specifies the address of server
- **path** specifies the path of web page on the disk of server.

Example

http://www.google.com/services/index.html

- **http** stands for **hypertext transfer protocol**. It is used to access websites on Internet.
- **www** stands for World Wide Web
- **google** indicates the name of the website
- **com** indicates the type of website
- **/services** indicates subdirectory **services.** Slash "/" indicates start of a subdirectory.
- **index.htm** indicates the name of the specific page in web site.

Q. What is Email? How does it work? Describe email attachment.

Email stands for **Electronic Mail**. Email is the exchange of messages and files through Internet. Message can be in the form of graphics, sounds, video clips or simple text. It is a fast way of sending messages anywhere in the world in a very short time.

The sender and receiver may be sitting in the same building or anywhere in the world. One email message can be sent to multiple recipients. Email facility is provided by many Internet Service providers or specialized websites. **Yahoo**, **Hotmail** and **Gmail** are some popular examples of email providing websites.

Working of Email

An email program is used to create, send and receive emails. It is also known as **email client**. When the user sends an email message, the computer connects to an email server and transmits a copy of the message to that server. **Email server** is a host computer on the Internet that is used to send and receive emails. The email server receives the message and finds out the email server where that email is to be sent. It connects to that server and transmits another copy of the message.

Email Attachment

An email message can also contain attachments. **Attachment** is a process of sending connecting files with email message. Any type of file can be attached to email such as documents, spreadsheets, audio and video etc. MIME is an Internet protocol that supports email attachments. It stands for **Multipurpose Internet Mail Extension.** Different websites provide different file size that can be attached with an email message. Yahoo provides attachment size of 10MB.

Q. Explain an email address.

Every email account has unique address. The general format of an email address is as follows:

username@DNS Address

An email address has two parts:

- Username
- DNS Address

These two parts are separated by the symbol @.

Example

myemail@hotmail.com

myemail

myemail is called user ID. It is used to sign into email service.

@

The symbol is called **at** sign. It separates user ID from name of email service provider.

hotmail.com

It indicates the DNS address.

Q. List out some limitations or disadvantages of Email.

Some limitations of email are as follows:

1. Lack of Privacy

Email does not provide high privacy. An email passes from one computer system to another through different networks. The system administrator of a network or a hacker can read the contents of emails.

2. Junk Email

Junk email is an unwanted email. It is also known as **spam**. A person may send such email that the receiver does not want to read. A large number of junk emails may fill the space of email account.

3. No Emotions

An email message cannot express emotions properly. The receiver cannot view the facial expression or voice of the sender.

4. Possible Delay

Email is read when the user connects to the Internet and checks email account. An urgent message may be ignored or delayed if a person does not check his email account soon.

5. Communications Problems

Email may not be delivered successfully due to communication errors.

6. Spreading of Virus

Most of the viruses are spread through email messages. Virus can spread if the user opens an email containing a virus.

Q. Write a note on ISP.

ISP stands for **Internet Service Provider**. It is a company that provides Internet connections. ISP also provides the facilities of Email. A connection from ISP is necessary to connect to Internet. Different ISPs in Pakistan are as follows:

- PTCL
- Word Call
- Comsats

Q. What is difference between URL and Website?

The URL is the web address for any given web document. Every web document has a unique URL. URL is written in web browser to visit the web page.

http://www.hec.gov.pk/index.html

Website is a collection of related web pages stored on computers around the world. Anyone can view these web pages through a web browser.

http://www.hec.gov.pk

Q. Differentiate between Internet and WWW.

Internet

Internet is a collection of millions of computers around the world that are all connected to one another. It is a global network of computers. These computers are connected through different telecommunications links.

Internet is used to find information stored on the computers called **hosts** or **servers**. Each computer connected to the Internet can act as host. A host computer provides information to the people.

WWW

WWW stands for **World Wide Web**. It is also called **Web**. It provides the facility to publish information on the Internet. It is a collection of documents or web pages stored on computers permanently connected with Internet around the world. WWW is a service that is available on the Internet. It uses the Internet for its existence.

Q. What is search engine? How information is searched using search engines? Name five popular search engines.

Search engine is a website that provides the facility to find the required websites on a particular topic. A user can search any topic on Internet using search engines. Internet contains a lot of information. A large number of websites about different topics are available. A user cannot remember all websites. He can search different websites using search engines.

Search engine contains the record of many websites. It searches the required websites and display them to the user. Search engines are very powerful tools for finding information.

Searching Information using Search Engine

Keywords are used to search the required information from search engine. Keyword is a word or set of words that is related to the topic being searched. The keywrod is typed in double quotation if it consists of two or more words.

For example, the following keywords can be used to search information about Pakistani universities:

"Pakistani Universities" "Universities in Pakistan"

Most Popular Search Engines

Google	http://www.google.com
Yahoo	http://www.yahoo.com
Bing	http://www.bing.com
Ask	http://www.ask.com
Excite	http://www.excite.com

Q. Write a note on News Groups.

A **newsgroup** is a discussion group on the Internet. People exchange information on a vast range of topics such as news, business, science and computer. A user sends message to the newsgroup to participate in discussion. Other users in the newsgroup read and reply to the message.

A software is required to obtain articles from **news server**. A news server is a host computer that exchanges articles with other servers on the Internet. These servers use **Network News Transfer Protocol (NNTP)** to communicate. The users have to subscribe on a news group to view articles on a specific topic.

Q. How the use of Internet is affecting society? Give your comments.

The Internet is greatly affecting our society. These affects are both positive and negative. Following are some important effects of the Internet on the society:

1. Positive Effects

The positive effects of the Internet of the society are as follows:

i. Globalization

Internet has converted this world into a global village. People are connected with one another using the Internet and related technologies. It has provided more opportunities of interaction. It also enables people to understand the views of one another.

ii. Flow of Information

Internet contains information on all types of topics. People can search information on any topic. Search engines are used to search information on Internet. Easy access to information has enabled people to be informed.

iii. Better Understanding

Internet is an easy way of communication among people. They can exchange their views. It has created better understanding. People can understand the views and thinking of one another. It helps in creating harmony and peace in the world.

iv. Comfort in Life

The use of Internet has provided many comforts for society. People can perform their duties easily. They can sell and buy goods online. They can run their business using Internet.

v. Knowledge

Internet is a source of huge information. People can get information from websites. They can interact with different people, scholars and learned persons to get knowledge.

2. Negative Effects

Some negative effects of Internet on the society are as follows:

i. Social Cutoff

Many people spend a lot of time on the Internet. It affects the social interaction with the people.

ii. Immorality

Internet contains many immoral websites. The websites contains such material that is against the moral values of society. These websites damage the character of young people.

iii. Wastage of Time

Many people use Internet without any positive purpose. The young people waste their time in chatting. It affects their performance and makes them inefficient.

Short Questions

Q.1. Define Internet.

Internet is a huge collection of computers all over the world that are all connected to one another. It is a global network of computers. These computers are connected through different telecommunications links.

Q.2. Write the main functions of the Internet.

There are three main functions of the Internet:

Communication: Internet can be used to contact and exchange information with friends and organizations anywhere in the world.

Retrieve: People can access a broad range of data and information from websites.

Shop, Buy and Sell: People can buy and sell goods and services on the Internet

Q.3. Which protocol is the heart of the Internet?

The TCP/IP protocol is the heart of the Internet.

Q.4. Describe ARPANET.

During Cold War America developed a network named ARPANET. It was developed for Advance Research Project Agency (ARPA). It was used to send information to armed forces at long distances.

Q.5. What is DARPA?

DARPA stands for Defense Advanced Research Projects Agency. DARPA worked to share data not only on single network but also among different networks.

Q.6. Explain TCP/IP.

TCP/IP stands for Transmission Control Protocol/Internet Protocol. This protocol is used to share and transfer data among different networks. This is the most commonly used protocol over the Internet.

Q.7. How many addressing schemes are used on the Internet.

Two types of addressing schemes on Internet are IP addressing and DNS Addressing.

Q.8. What is the purpose of IP addressing?

IP address is a unique number that refers to a computer connected to the Internet. IP stands for Internet Protocol. This address is a 32-bit number. It consists of four numbers separated by period. Each number is between 0 and 255. These numbers are known as octets. An example of IP address is 127.80.144.30

Q.9. Describe the composition of an IP address.

IP address is a string of four numbers. Each string is separated by periods or dots.

Q.10. What is DNS addressing?

IP address is difficult to remember for the users. An alternative to IP address is known as domain name. A domain name consists of text instead of number. It is easier to remember a domain name than IP address. A domain name is associated with one or more IP addresses.

Q.11. Write the advantage of using a domain name to address a node than IP address.

A domain name is easier to remember and more readable by a human user.

Q.12. List three top-level domain names.

The top-level domains are .edu, .com, .gov,.net, .org.

Q.13. What are included in an Internet address?

An Internet address has four parts:

1. The name of the host computer.
2. The name of the institution or organization
3. The domain name.

Q.14. How can we connect to Internet?

The required things to establish connection to Internet are Computer, Modem, Dialup Software, ISP Connection and Web Browser.

Q.15. Write some facilities provided by Internet.

Some important facilities provided by Internet are World Wide Web, Email, File Transfer (FTP) and Remote Terminal (Telnet).

Q.16. Define WWW.

WWW stands for **World Wide Web**. It is also called Web. It provides the facility to publish information on Internet. It is a collection of documents stored on computers permanently connected with Internet around the world.

Q.17. Define the term uploading and downloading.

The processing of copying data from your computer to Internet is known as uploading. The process of copying data from Internet to your computer is known as downloading.

Q.18. Describe web publishing.

The process of developing and maintaining web pages is known as web publishing. Web development does not require programming skills. Many tools are available to develop professional web pages.

Q.19. How web pages are created?

Web pages are created in **hypertext** using special languages. The most popular hypertext language is called HTML. It stands for **Hyper Text Markup Language**.

Q.20. When is HTML needed for the WWW? Who uses HTML?

HTML is used to make Web Pages. It is a small set of commands to tell a browser how to display the text and pictures in a Web Page. It specifies the position, size and color of text, graphics, sound and video. It also identifies what pages to display when links are clicked.

Q.21. What is Email?

Email stands for **Electronic Mail**. Email is the exchange of messages and files through Internet. Message can be in the form of graphics, sounds, video clips or simple text. It is a fast way of sending messages anywhere in the world in a very short time.

Q.22. Name some advantages of Email.

Email is free, easily accessible, convenient and quick.

Q.23. Write four problems associated with e-mail.

E-mail can be a threat to privacy. It can be faked. It cannot communicate emotions properly. It may be delayed due to communication problems.

Q.24. Which types of files can be attached to email messages?

The types of files that can be attached to email messages are Word documents, pictures and other multimedia files etc.

Q.25. Define email address.

Every email account has unique address. An email address usually has two parts i.e. User ID and Identity of email service.

Q.26. Give one example of email address.

pakistan@yahoo.com

Q.27. What do you know about News Groups?

A newsgroup is a global electronic bulletin board system. People exchange information on a vast range of topics such as news, recreation, business, science, and computer.

Q.28. Define Website.

A collection of related web pages is called **website**. Each website has a unique address. It contains text, graphics, sound, and video.

Q.29. Write a short note on ISP.

ISP stands for Internet Service Provider. It is a company that provides Internet connections. It also provides email facility. An ISP connection is used to connect to Internet.

Q.30. Name some popular ISPs.

Different ISPs in Pakistan are Comsats, BrainNet, WOL and DANCOM.

Q.31. What is web browsing or web surfing? List two names of Web Browser.

Web browsing or web surfing is a process of searching information on the World Wide Web. A software used to search and view web pages is known as web browser. The two names of browsers are Internet Explorer and Netscape.

Q.32. Distinguish between HTTP and HTML.

Hypertext Transfer Protocol (HTTP) is the standard used for the transfer of requests and responses. Hypertext Markup Language (HTML) is a standard used to create webpages.

Q.33. State the use of Web Browser.

A browser is a software that is used to view web pages. It acts as an interface between the user and the Internet. It can display text and graphics. Browsers are also known as **web clients** or **universal clients**.

Q.34. List names of some popular web browsers.

Some popular web browsers are Mozilla Firefox, Google Chrome, Internet Explorer, Opera and Safari.

Q.35. Differentiate between Web browsers and servers.

Web browsers display Web document and enable users to link to other Web pages. Web servers respond to the requests of browsers. They find and send requested resources back to the browser.

Q.36. List three types of specialized servers that are found on the Internet.

The specialized servers are E-mail servers, application server and Web servers.

Q.37. What is domain name?

Domain name is the unique name given to a web site. This name is linked to a web server where the information of that web site is stored. www.pakwatan.com.pk is the example of a domain name.

Q.38. Describe the use of Web Server.

Web server is a computer that is used to store information for the users on the Internet. A web server is much faster and powerful than ordinary computer It may be located anywhere in the world. Servers are connected to the Internet 24 hours a day.

Q.39. What does URL mean?

URL stands for **Uniform Resource Locator**. It is the web address for any given web document. Every web document has a unique URL.

Q.40. Which part of the following URL is a domain name? What are the other parts?

URL: http://www.pu.edu.pk/index.html

A B C

Part A specifies hypertext transfer protocol. Part B is a domain name. Part C is a file.

Q.41. Name three components of a URL.

The three components of a URL are protocol, address of the host computer and path to the resource (file).

Q.42. Distinguish between HTTP and FTP.

HTTP is to establish a connection with a Web server and transmit HTML pages or any other files to Web browser. FTP is used to download and upload files on the Internet.

Q.43. Differentiate between Email addresses and URLs

Email addresses are used to identify a particular user on the Internet. URLs are used to identify a web server that makes information available via World Wide Web. URL is typed into web browser to display particular page of information.

Q.44. How to access a web page

There are two main ways to get to a page on web. The user can enter URL for the page and press enter. The user can also click a hyperlink that opens the desired page.

Q.45. Write the protocol and the domain name of the following URL. Also state the top level domain.

http://www.student.net/learning/english.html.

The protocol is HTTP (HyperText Transfer Protocol). The domain name is student.net. The top level domain is net.

Q.46. Differentiate between URL and Website.

The URL is the web address for any given web document. Every web document has a unique URL. URL is written in the web browser to visit the web page. Website is a collection of web pages that are stored on computers around the world.

Q.47. Explain the importance of Search Engine.

Search engine is a website that provides the facility to find the required websites on a particular topic. A person can search any topic on Internet using search engines. Search engine contains the record of different websites.

Q.48. Define web hosting.

Web hosting is a facility for providing space on Internet for storing web pages. Web hosting is provided by different organization commercially.

Q.49. List five search engines.

Some important search engines are www.google.com, www.altavista.com, www.yahoo.com, www.lycos.com and www.excite.com.

Q.50. What is news server?

News server is a host computer that exchanges articles with other servers on the Internet. They use Network News Transfer Protocol (NNTP) to communicate.

Q.51. Differentiate between Internet and Web.

The Internet is the physical connection of millions of networks. The Web uses the Internet for its existence. The Web consists of hypertext embedded on Web pages that are hosted on Web sites

Q.52. Write any three positive impacts of computer and Internet on society.

Firstly, the use of computer makes different tasks easier, quicker and efficient. Secondly, the computer is used in education to improve teaching and learning. It is used to educate the students effectively. Thirdly, computer and Internet is used by people to conduct financial transaction. They can pay bills and send or receive money online.

Q.53. Write any three negative impacts of computer and Internet on society.

Firstly, the use of computer has increased unemployment as different tasks are performed automatically. Secondly, many people use computer without any purpose. They waste time and energy. Thirdly, computer and Internet is used to commit crimes. People hacks card numbers etc.

Multiple Choice

1. **Collection of millions of computer interlinked to one another is called:**
   a. Interlink b. Internet c. Collection d. Group
2. **Which of the following is an Internet Protocol?**
   a. Ethernet b. ARCnet c. TCP/IP d. MAC
3. **TCP/IP stands for:**
   a. Transmission Control Protocol/Internet Protocol
   b. Transfer Collector protocol/International Protocol
   c. Transitional Covered Protocol/Intranet Protocol
   d. Transferred Collected Protocol/Internet Protocol

4. **The USA Defense Department initiated the Internet in:**
   a. 1969 b. 1976 c. 1978 d. 1980
5. **ARPA stands for:**
   a. American Rational Program Association
   b. Advanced Residential Programming Association
   c. Advanced Research Project Agency
   d. Arizona's Russian Program of Association
6. **DARPA stands for:**
   a. Defensive Association of Russian Policy with America
   b. Dared Association of Republic Partition
   c. Defense Advanced Research Projects Agency
   d. Defensive Advanced Regional Political Agency
7. **Who owns the Internet?**
   a. U.S. Government b. Pak Telecom c. United Nations d. None
8. **A computer can be linked to the internet through:**
   a. A phone-line modem b. DSL c. Cable Modem d. ALL
9. **How many types of addressing scheme?**
   a. 3 b. 2 c. 5 d. 8
10. **Every host computer on the Internet has a(n):**
    a. Similar IP address b. Unique 15-digit number
    c. Unique IP address d. Common name and number
11. **A standard IP address is composed of a total of:**
    a. 4 bits b. 16 bits c. 32 bits d. 256 bits
12. **The system that translates an IP address into an easier name is called:**
    a. Packet-switching domain system. b. Domain name system.
    c. Domain. d. Domain numbering system
13. **Which of the following is a top-level domain?**
    a. http b. .com c. HTML d. URL
14. **All of the following are top-level domains EXCEPT:**
    a. .edu b. .org c. .gov d. .bus.
15. **All of the following are top-level domains EXCEPT:**
    a. .mil b. .org c. .gov d. .army
16. **How does the Internet differentiate one computer from another?**
    a. Architecture b. Manufacturer c. IP address d. All
17. **What is the protocol in the URL "http://www.Microsoft.com"?:**
    a. www b. http c. Microsoft d. com
18. **ISP stands for:**
    a. International Service Provider b. Internet Service Provider
    c. Interlinked Services Provision d. Intranet's Service Party
19. **Software used to access the Internet is called:**
    a. Browser b. Packaged c. Spreadsheet d. HTTP
20. **Which of the following is a specialized server found on the Internet?**
    a. Email server b. file (ftp) server c. Web server e. all

21. **A collection of documents stored on computes permanently connected with internet around the world is called:**
a. Telnet b. WWW c. LAN d. FTP

22. **The World Wide Web was introduced in:**
a. 1960s. b. Mid-1970s. c. 1989. d. 2000.

23. **Web pages are written in which type of language?**
a. Hypertext b. Multimedia c. Hyperlinks d. Assembly

24. **Web pages are connected to one another using:**
a. Hyperlinks b. HTTP c. Interlink d. Multimedia

25. **A collection of related web pages is called:**
a. Web-link b. Web site c. Internet d. Linking

26. **URL stands for:**
a. Universal Research Limit b. United Russian Language
c. Universal Resource Locator d. Uniform Resource Locator

27. **A Web browser looks for the Uniform Resource Locator, which is the Web site's**
a. Code b. File extension c. Address d. Protocol

28. **E-mail stands for:**
a. Electric-mail b. Electronic mail c. Elective-mail d. Elaborated-mail

29. **The format of an email address is:**
a. User name# DNS Address. b. User name& DNS Address.
c. User name@ DNS Address d. User name$DNS.com

30. **Symbol that separates parts in an e-mail address is:**
a. $ b. # c. @ d. ^

31. **In the Web address, http://www.microsoft.com, http is the:**
a. URL b. Domain name c. Protocol d. Extension

32. **A computer used to store information for users on the Internet is called:**
a. Web Server b. Web Client c. Web application d. domain name

33. **An Internet Service Provider gives you access to:**
a. E-mail. b. FTP c. Chat lines. d. All

34. **The three-character extension that designates a URL as a commercial site is:**
a. gov b. com c. org d. mil

35. **The general format of the URL:**
a. Type://address/path/ b. Path /address/type
c. Address/type/path d. address/path/type

36. **In the general format of URL, type://address/path, type is the:**
a. Type of server b. type of software c. type of protocol d. None

37. **In the general format of URL, type://address/path, path is the:**
a. Path of the page on the disk of the server b. Path of page to open the software
c. Path of the email address to open email d. All

38. **Services on the Internet include**
a. World wide web b. FTP c. e-mail d. all

39. **Copying data from Internet to computer is called:**
a. Uploading b. Downloading c. Transferring d. None

40. Transferring information from computer to Internet is called:
a. Downloading b. Down Seizing c. Uploading d. Pasting
41. Which of the following is used to find information on the Word wide web
a. Web Browser. b. Website c. Search engine d. Web server
42. Which of the following protocol is used to access web pages on Word wide web
a. Ethernet b. Gopher c. HTTP d. HTML
43. This is not one of the leading search engines.
a. Google b. Yahoo c. Excite d. Netscape Navigator
44. When you send another file with your e-mail message, it is called:
a. Enclosure b. Supplement c. Attachment d. Heavy mail
45. The computer that manages sending and receiving of emails is called:
a. Mail Server b. Web Browser c. HTTP d. Outlook
46. A discussion group to exchange information like science and computer is called:
a. E-Commerce b. FTP c. Newsgroup d. Chatting
47. Another name for email program is:
a. Internet Explorer b. email client c. Mail server d. None
48. When anyone sends email to your email address, it is stored in your:
a. URL b. PC c. Mailbox d. None
49. In the e-mail address me@pu.edu, "me" is the:
a. Password. b. Server name. c. User name. d. Client computer.
50. Which portion of the URL is the domain name?
a. microsoft.com b. www c. http d. ://
51. Which portion of the URL is the top-level domain?
a. Http b. Microsoft c. www d. com
52. DNS stands for:
a. Domain Name System b. Decimal Number System
c. Dual Number System d. Decimal Numeric System
53. The USA defense department initiate the Internet in:
a. 1969 b. 1976 c. 1978 d. 1980
54. The standard protocol for the Internet is
a. TCP b. IP address c. IP protocol d. TCP/IP
55. The most widely used web protocol is:
a. http:// b. HTML c. URL d. ISP
56. .com, .edu and .gov are examples of:
a. Top level domain b. Tag c. Protocol d. None
57. A domain name is the text version of:
a. IP address b. Hyperlink c. Username d. None
58. _____ is an online area in which users have written discussions about a particular subject.
a. Email b. protocol c. FTP d. Newsgroup

Answers

1. b	2. c	3. a	4. a	5. c	6. c
7. d	8. d	9. b	10. c	11. c	12. b
13. b	14. d	15. d	16. c	17. b	18. b
19. a	20. d	21. b	22. c	23. a	24. a
25. b	26. d	27. c	28. b	29. c	30. c
31. c	32. a	33. d	34. b	35. a	36. a
37. a	38. d	39. b	40. c	41. a	42. c
43. d	44. c	45. a	46. c	47. b	48. c
49. c	50. a	51. d	52. a	53. a	54. d
55. a	56. a	57. a	58. d		

Fill in the Blanks

1. Collection of related web pages is called_____.
2. Initially APRANET was a _____ connecting small number of users.
3. News Server uses_____ protocol to transfer articles among them.
4. NSF established a separate high speed network called_____.
5. The LAN can be connecting to ISP using a high-speed phone line called_____.
6. World Wide web was established in_____.
7. MIME stands for_____.
8. The four numbers is an IP address are called_____.
9. _____ address is easy to remember.
10. HTML stands for_____.
11. _____ is a collection of millions of computers linked together on a computer network
12. Searching information on the worldwide world is referred to as _____.
13. A web page is a document written in _____.
14. A hypertext document is also called a _____.
15. Web sites are hosted on sever computer on the Internet called _____.
16. The process of launching web page is called _____.
17. google.com, ask..com , altavista.com are examples of _____.
18. Email program is also called _____.
19. Junk mail is called _____.
20. The process of copying data from Internet to your computer is known as _____.
21. ISP stands for _____

Answers

1. website	2. Wide area Network	3. NNTP
4. NSFNet	5. T1 Line	6. 1989
7. Multipurpose Internet Mail Extension		8. Octets
9. DNS	10. Hyper Text Markup Language	
11. Internet	12. Web Browsing	13. HTML
14. Web pages	15. Web Server	16. web publishing
17. Search Engine	18. Email client	19. Spam
20. Downloading	21. Internet Service provider	

True / False

1. IP address is a 16 bit addressing scheme.
2. Every computer on a network has a Network Interface Card that directly connects it to other computers.
3. URL is used to locate a computer on the Internet.
4. A hypertext document is also called Web page.
5. Email server is software used to create, send and receive emails.
6. Each computer must have HTTP server configured to connect to the Internet.
7. NNTP stands for National News Transmission protocol.
8. On Internet junk emails are also called Spam.
9. News Server is used to streamline the news transmission of the local radio stations.
10. You can not attach a file larger than 20mb to an email.

Answers

1. F	2. T	3. F	4. T	5. F
6. F	7. F	8. T	9. F	10. F

Chapter 11

Miscellaneous Topics

For Federal Board of Education, Islamabad.

NOTE: This chapter is only for the students of Federal Board of Education, Islamabad.

Q. Briefly write different forms in which information can be represented.

Information can be represented in a computer in four different forms as follows:

- **Data:** The first method presents the information in its basic and most elementary form. It is a string of characters including letters and numbers. It is known as data. An item of data may be name, price, code number etc. An item of data itself is not very useful. It becomes useful it is combined with other information.
- **Text:** The second method presents the information written as phrases and sentences called text. Text is much longer than a basic item of data. It is also more meaningful.
- **Image:** The third method presents the information in pictorial form called image. It includes charts, graphs, pictures and drawings etc. The information in this form is more comprehensive and meaningful than data.
- **Voice:** The fourth method presents the information in spoken phrases and sentences. It is known as voice. It is also more meaningful than an time of data.

A message is often conveyed by using two or more forms of information. Sometimes, the same information can be represented using alternative methods. A method should be selected that represents the information most clearly and accurately.

Q. What is the role of microprocessor in IT revolution?

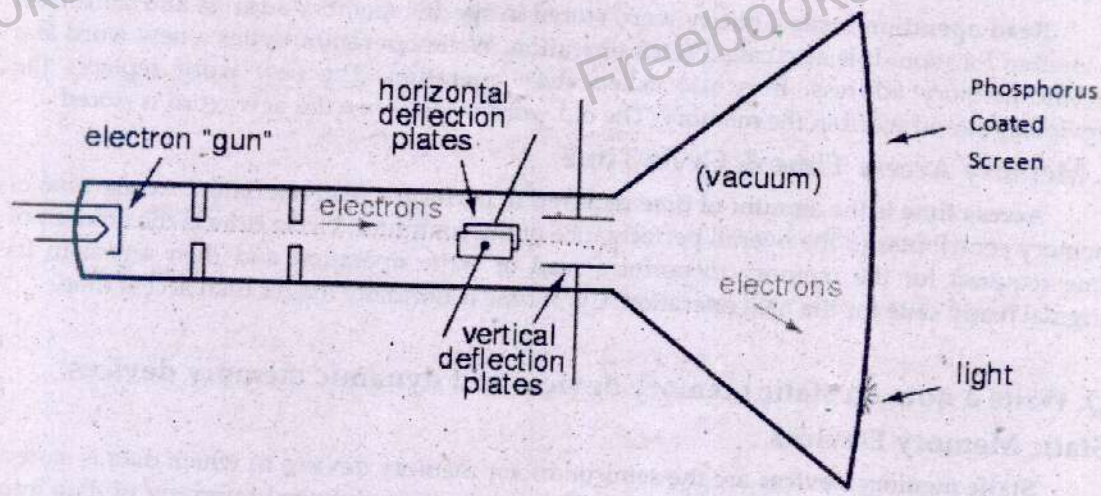
Role of Microprocessor in IT Revolution

Information technology is based on microprocessor. Microprocessor is a single IC chip that performs all processing on data. It controls the operation of the entire computer system.

The early computers could process simple data only. Modern computers are very powerful because they use microprocessor to process data. These computers can process other forms of data such as graphics, audio and video etc. These computers are also very cheap, small and more reliable. The power of modern computers is increasing and their price is decreasing since the invention of microprocessor in 1960s. The use of microprocessor has brought a revolution in the field of information technology.

Microprocessor is now very cheap and small. It can be used in many devices such as cameras, washing machines and cars etc. Microprocessor is used as a control mechanism in these devices. For example, many appliances are able to control themselves without human intervention. The use of microprocessor in commonly used devices has made an impact on human lives. It has brought large improvements in efficiency and productivity.

Q. Draw a diagram of CRT and label its parts.



Q. List and briefly describe any three operations for which the Mouse may be easier than the keyboard.

Mouse is easier to use than keyboard for the following reasons:

- **Picking:** Mouse can be used easily to select different options from a list displayed on the screen.
- **Pointing:** Mouse can be moved easily and rapidly from one point to another point in documents or files of records etc.
- **Drawing:** Mouse can be used easily to create lines and other shapes on the screen.

Q. What is firmware?

Firmware

Firmware is a software embedded in electronic devices during manufacturing process. Firmware is used when the programs are rarely or never expected to be changed. Firmware is not lost when the power is turned off. For example, firmware is used in toys and many appliances such as microwave oven and washing machines etc. Computer chips such as ROM, PROM and EPROM contain firmware.

Q. Define the following terms:

1. Memory cell
2. Memory word
3. Read & Write Operation
4. Memory Access time & Cycle time

1. Memory Cell

Memory cell is an electrical circuit used to store a single bit (0 or 1).

2. Memory Word

Memory word is group of bits in memory. It represents some type of information or data. The word size in modern computers is typically from 4 to 64 bits.

3. Read & Write Operation

Read operation reads a binary word stored in specific memory address and transfered to another location. It is also called **fetch operation. Wrtie operation** writes a new word at a specific memory address. It is also called **store operation**. The new word replaces the previously stored word in the memory. The old word is lost when the new word is stored.

4. Memory Access Time & Cycle Time

Access time is the amount of time required to perform a read operation. Access time of memory contributes to the overall performance of the computer. **Cycle time** is the amount of time required for the memory to perform read or write operation and then return to its original ready state for the next operation. Cycle time is normally longer than access time.

Q. Write a note on static memory devices and dynamic memory devices.

Static Memory Devices

Static memory devices are the semiconductor memory devices in which data is stored permanently as long as power is supplied. These devices do not need rewriting of data into memory periodically.

Dynamic Memory Devices

Dynamic memory devices are the semiconductor memory devices in which data is not stored permanently even if power is supplied. These devices need rewriting of data into memory periodically. This operation is called **refresh operation**.

Q. Briefly discuss the general memory operations.

General Memory Operations

Each type of memory is different in its internal operation. However, some basic operating principles are same for all memory systems. Every memory system requires several types of input and output lines to perform the following functions:

1. Select the address in memory that is being accessed for read or write operation.
2. Select read or write operation to be performed.
3. Supply the input data to be stored in memory during a write operation.
4. Hold the output data coming from memory during a read operation.
5. Enable or disable memory so that it may or may not respond to the address inputs and read/write command.

Q. Write short note on short term memory and long term memory.

Short Term Memory

Short term memory is used to store the instructions to be executed by computer and the data to be processed. It also stores the results of operations performed by ALU. It consists of semiconductor IC chip memory. It is also known as **main memory**.

Long Term Memory

Long term memory is used to store information permanently. It consists of magnetic disks, magnetic tapes and compact disks. It is also known as **secondary** or **auxiliary storage**.

Q. Draw a diagram of microprocessor showing the interconnection between its various components and briefly explain any four parts of it.

The term **microprocessor** refers to the central processing unit of a microcomputer. It contains the arithmetic logic unit (ALU) and control unit. It is connected to memory and I/O by buses which carry information between the units. Its differen parts are as follows:

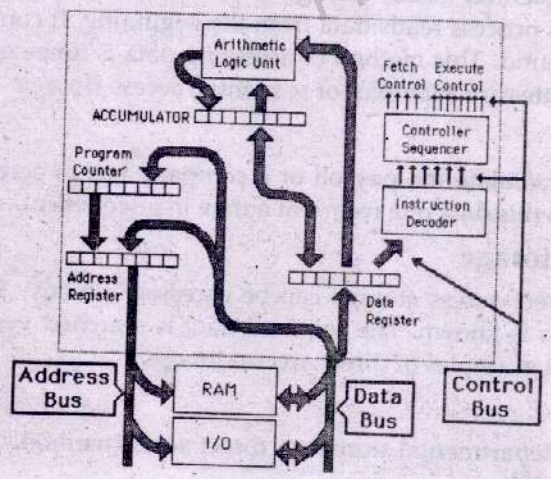
Buses

The information is transferred between units of microcomputer by collections of conductors called buses. There is one conductor for each bit of information to be passed, e.g. 16 lines for 16 bit address bus. Different types of buses are address, control and data bus.

The address bus carries address code from microprocessor to the memory to select the memory location for a read or write operation. It a unidirectional bus. Data bus is a bi-directional bus. It transfers binary information from microprocessor to memory or from the memory to microprocessor. Control bus is a grouping of all the timing and control signals to synchronize the operation of microprocessor with other units. It is a unidirectional bus.

Arithmetic Logic Unit

All arithmetic operations of a microprocessor take place in arithmetic logic unit. The operation to be performed is specified by the signals from control unit. The data on which the operations are performed come from memory or external input. The data may be combined in some way with the contents of the accumulator and the results are typically placed in the accumulator. The results may then be transferred to memory or to output unit.



Registers

ALU and control unit contains several registers to store various kinds of information. The information is required by microprocessor to perform different functions. These registers serve as dedicated memory locations inside memory chip. Each register shown in the figure is indicated by its full name.

- **Program counter:** This register controls the sequence in which the instructions are fetched from memory. Its contents indicate the address in memory from which the next byte of instruction code is to be fetched. It provides an instruction code address to the memory unit during an instruction fetch operation.

- **Data Address Register:** This register provides an operand address to memory unit when microprocessor has to access memory during execution phase of an instruction.
- **Accumulator and Data Register:** These two registers hold the operands on which the ALU operates during the execution of an instruction. The operands are loaded into these registers from memory. The results of ALU operation are then transferred to the accumulator. Both the accumulator and data register can receive data from memory over the data bus but only the accumulator can send data to memory.

Control Unit

The control unit directs the operation of other units by providing timing and control signals. It is the function of microcomputer to execute programs which are stored in memory in the form of instructions and data. The control unit contains the necessary logic to interpret instructions and to generate the signals necessary for the execution of those instructions. It fetches an instruction by sending an address and a read command to the memory unit. The instruction at that memory address is transferred to the control unit for decoding. It then generates the necessary signals to execute the instruction.

Q. Explain sequential and direct access storage with example.

Different methods of accessing data from storage devices are as follows:

1. Sequential Access Storage

The data in sequential access storage is accessed in a sequence. The data cannot be accessed directly. This process reads data from the beginning. It continues reading data until the required data is found. This method of accessing data is time-consuming. Magnetic tape, audio and video cassettes are examples of sequential access storage.

Example

A program to calculate the payroll of a company has to access all data of company's employees. It accesses this data one record at a time in a sequence.

2. Direct Access Storage

The data in direct access storage can be accessed directly. The required data can be accessed if its address is known. The required data is searched very quickly. Magnetic disc and CD are important examples of direct access storage.

Example

A program in departmental store uses direct access method. The details of all items for sale are needed randomly.

Q. Write the purpose and benefits of networks.

Purpose of Networks

Networks are used for sharing resources and communication. The resources that are shared over networks include files, printers, hard disk and application software. Networks also provide the facility of remote access.

Benefits of Networks

Networks increase the productivity. The sharing of expensive devices such as printers can save money. A single copy software can be installed on server and many users can use it over the network. It saves a lot money and also minimizes the time and efforts of installing and configuring the software.

Q. Write briefly about types of software used in workgroup computing.

Group ware includes following types of software:

1. Email is a very common method of sending messages. The modern email programs provide many facilities. Most email programs provide an easy method to transmit formatted files, voice, animations and other attachments. Any email or groupware application uses a database to manage users, files and internal messaging facilities. The groupware applications should all support the same messaging and directory standards to work smoothly in a collaborative environment.
2. Scheduling and contact management groupware is used to share and update group schedules across the networks.
3. Document sharing and document management groupware is used to create, share, edit and distribute documents online. These programs allow the user to see the changes made by others. Some groupware allow two or more people to work on the same document at the same time.
4. Teleconferencing software combines audio, video application-sharing and shared electronic chalkboards in collaborative computing.

Q. Define Modulation. Name and describe any three forms/methods of modulation with the help of diagrams.

Modulation

The data on a network is transmitted through an electrical signal called carrier signal. The signal oscillates back and forth across a zero voltage line. The area above the line indicates a positive voltage and the area below the line indicates a negative voltage. That is why a carrier signal is also called a carrier wave or sine wave.

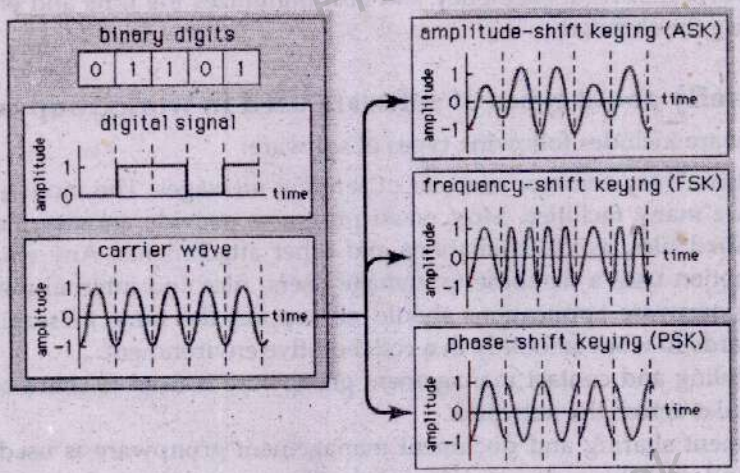
A carrier signal or wave is an analog signal. Analog signal is a continuous wave whereas a digital signal is made up of discrete elements. The analog signal requires some method to convert it into digital data. The change made to the signal is called **signal modulation** or **modulation**. The signal modulation is performed by a modem in many data communication networks.

Three types of modulation used in a data communication network are amplitude modulation, frequency modulation and phase modulation.

1. Amplitude Modulation (AM)

Amplitude Modulation refers to a change in the height of the carrier wave. The height of the signal is changed to indicate a 0 bit or 1 bit when data is sent on the carrier signal. The highest peaks of the signal represent 1 bits and the lowest peaks represent 0 bits. In this situation, the high peaks in the sine wave produce louder sounds and the low peaks on the sine wave produce a quieter sound.

Amplitude modulation is often used for radio transmission specifically by AM radio stations. The AM signal is highly vulnerable to noise and interference from external sources such as that caused by thunderstorm. For example, the signal crackles each time a bolt of lightning strikes near a radio transmitter or receiver.



2. Frequency Modulation (FM)

Frequency Modulation refers to the number of waves used to represent a single cycle. The number of waves changes for a 0 or 1 bit. This change in frequency is indicated by a difference in the tone of the signal. A higher tone indicates more waves per unit of time and a lower tone indicates fewer waves per unit of time. The high-pitched tones indicate 1 bits and the low pitched tones indicate 0 bits in the above figure. Frequency modulation is used by FM radio stations to send radio transmission. It is also called **Frequency Shift keying (FSK)**.

Frequency modulation is more resistant to external interference. FM radio signal is not interrupted by a passing thunderstorm. The signals sent using frequency modulation are less vulnerable to errors than signals sent by amplitude modulation.

3. Phase Modulation (PM)

Phase Modulation is the third and most complicated type of signal modulation. A phase shift occurs to indicate a change in the types of bits being transmitted. The phase or direction of the wave changes when it goes from 0 to 1 bit or from 1 bit to 0 bit. The wave moves in a specific direction to indicate a 1 bit. The direction of the wave changes to 180 degree when a 0 bit is detected. The direction stays the same until another 1 bit is detected. The sine wave immediately changes to the opposite direction each time a different bit is detected because the change is a 180 degree phase change. The direction changes but the amplitude and frequency of the signal remain the same. This type of phase modulation is called **Phase Shift Keying (PSK)**.

Q. What is networking software?

Computer networks require a combination of hardware and software. A networking **operating system (NOS)** is required to manage the network properly. A networking operating system is an operating system with built-in networking features.

Networking operating system provides all features required to communicate over network, access network resources and share them. It also provide the facilities to manage user accounts, passwords, printers and shared information etc. Some examples of NOS are Windows 2000, Unix and Linux.

Q. Briefly discuss the key elements of protocol.

Key Elements of Protocol

The key elements of protocol are syntax, semantics and timing.

1. Syntax

Syntax refers to the structure or format of data. For example, a protocol may expect the first eight bits of data as the address of the sender, the second eight bits as the address of the receiver and rest of the stream as the message itself.

2. Semantics

Semantics refers to the meaning of each section of bits. It includes how should a particular pattern be interpreted and what action should be taken. For example, an address may identify the route to be taken or the final destination of the message.

3. Timing

Timing indicates when data should be sent and how fast it can be sent. For example, a sender may produce data at 100 Mbps when receiver can process data at only 1 Mbps. The transmission will overhead the receiver and data will be lost.

Q. Write short notes on the following:

1. IEEE 802.X Standards 2. IEEE 802.3 3. IEEE 802.5 4. IEEE 802.6

1. IEEE 802.X Standards

The Institute of Electrical and Electronics Engineers (IEEE) has developed a set of standards that describe cabling, physical topology, electrical topology and access scheme of network products. The committe structure of IEEE is numbered like decimal system. The general committe working on these standards is 802. There are different subcommittes that worked on different versions of the standards. These standards describe the protocols used in the lower two layers of the OSI model i.e. Physical Layer and Data Link Layer.

2. IEEE 802.3

IEEE 802.3 describes a standard for Ethernet system. It uses **Carrier Sense Multiple Access (CSMA)** signaling on an electrical bus topology. An extension to 802.3 standards introduced signaling at 100 megabits per second under **Fast Ethernet** or **100 Base-T** standard.

3. IEEE 802.5

IEEE 802.5 describes the Token Ring architecture. It describes a token passing protocol used on a network in which all computers are connected in ring topology. Every computer passes information to the next computer in the ring.

4. IEEE 802.6

IEEE 802.6 describes standard for **Metropolitan Area Networks (MAN)**. MAN usually describes a backbone network of fiber optic cables spread over hundreds of square miles. The telephone companies and cable television companies provide MAN connections.

Q. Briefly describe the X.25 protocol.

X.25 Protocol

X.25 protocol is developed for connecting devices to a packet switching network. Packet switching is a method used by a communication system to get a message from one point to another. The protocol is responsible for delivering the message. It ensures that each packet arrives at the correct destination.

X.25 defines the content and structure of data to be transmitted. It also defines the error detection and error correction techniques. It is only concerned with the physical, data link and network layers of OSI Model. The physical layer ensures that the network device is connected to node on the packet switching network. The data link layer forms the data into packets with header information for sequencing and addressing. The network layer adds more control information to the front and the back of packet received from data link layer.

Q. What is switched network? Explain circuit switching and packet switching techniques used in data communication.

Switched Networks

Switched network consists of interconnected nodes. Data is transferred from source to destination through these nodes. Data is switched from node to node so it is called switched network. Different tyepes of switched networks are as follows:

Circuit Switching

Circuit switching creates a dedicated path between two nodes. The entire circuit must be available to transfer data. Data is sent on circuit-switching in three phases.

- The first phase establishes a circuit. This connection is required before data transfer.
- The second phase transfers the data.
- The third phase disconnects the circuit.

Telephone network is an example of circuit switching. First of all, a connection is established between two telephones. Secondly, two persons can talk with each other. Finally, the connection is terminated.

Circuit switching is not very efficient. The entire circuit is decicated for the duration of the connection and no other user can use it. It can also delay data transfer while the connection is being established.

Packet Switching

Packet switching network divides messages into fixed or variable sized packets and sents them to the destination. Each packet contains overhead information about destination. The individual packets may take different routes to reach final destination. The receiving node is responsible to rebuild the message and ensuring that all packets have been received. The packets contain sender's address, destination address and a sequence number in order to rebuild the message. Packet switching is more efficient and less expensive than circuit switching. It is used by most of the modern message switching networks.

Q. What is difference between circuit switching and packet switching?

Circuit switching is the switching method that is used in telephone networks. It sets up a temporary circuit between source and destination. The resources are reserved in network to meet the service. In packet switching, a message is divided in a series of segments or packets. Each packet contains the destination address and control instructions along with the message data. Data transfer on the Internet is based on packet switching. In this case, the Internet routers use the address information in each packet to send it on an efficient path toward its destination. Different packets of the same message may follow different paths. The message is reassembled when all packets of the message are received at destination. The communications protocol such as TCP/IP can request a retransmission of missing packet if some packets are lost.

Q. How media is important in communication? Discuss any three communication media in terms of security, cost and speed.

Communication network cannot exist without a medium. The medium is used to connect the source and receiver and provide path to send messages. A wide variety of transmission media can be used in a communication network. Three communication media in terms of security, cost and speed are as follows.

Security

Fiber optic cable is the most secure transmission medium. Fiber optic is harder to tap. Twisted pair and coaxial cable are easily intercepted.

Cost

Twisted Pair cable is the least expensive media for data communications. Coaxial cable is more expensive than twisted pair but less expensive than fiber optic. The most expensive form of wiring is fiber optic cable.

Speed

Fiber optic cable has the highest possible data transmission speed. Data can be transmitted up to 10 Gbps. Coaxial cable can support data transmission rates higher than a twisted pair cable. It has a data transfer rate of 10 Mbps.

Q. Explain some of the performance differences between twisted pair, coaxial cable and fiber optic cable.

A twisted pair cable is the slowest medium for data transmission. It consists of a pair of copper wires that are twisted to minimize distortion of the signal. Coaxial cable suffers from little distortion from external signals because it consists of a copper data transmission wire surrounded by insulation. It can support data transmission rates higher than a twisted pair cable. A fiber optic cable carries optical signals that are transmitted at the speed of light. It can support the highest data transmission rate required for broadband networks.

Q. Define data communication speed. Explain how it is measured. Briefly explain narrowband, voiceband and broadband.

Data Communication Speed

Bandwidth is the data communication capacity of a communication system. It is the range of frequencies available for the transmission of data. A communication system with wider bandwidth can transmit more data per second.

The unit for measuring the data communication speed is called **baud**. Generally, baud indicates the number of bits transmitted per second. Technically, it refers to the number of signal changes per second.

Grades of Channels

The grades of channels are commonly classified in three categories:

1. Low Speed or Narrow Band

Narrow band provides the bit transmission rate of 40 to 300 baud. The telegraph communication lines are included in this category. These channels are usually used for low-speed teletypewriter communications etc.

2. Medium Speed or Voice Band

Voice band provides transmission rate from 300 baud to 56,000 baud. It is als called voice band because it is used by the lines for voice communication. The telephone line is the most commonly used media for this category.

3. High Speed or Broadband

Broadband provides transmission rate over 56,000 baud. The high speed channels require microwave, fiber optics or satellite transmission. They are normally used in computer to computer communication. These systems can provide data transmission rates of 1 million baud or more. Broadband is used to transmit a large volume of data at a high speed.

Q. Describe computer integrated manufacturing (CIM).

Computer integrated manufacturing is a process of using computers to perform the functions related to the designing and manufacturing of products. The technology related to computer integrated manufacturing is called CAD/CAM. **CAD** stands for **computer aided desing** and **CAM** stands for **computer aided manufacturing**.

CAD/CAM technology is used in many industries such as machine components, electronics products, equipment design and fabrication of chemical processing. It is used to perform manufacturing operations automatically. CAD uses computer systems in creation, modification, analysis and optimization of design. CAM uses computer systems in planning, control and management of production operations.

Q. Briefly describe computer graphics.

Computer graphics are the images or animated motion pictures displayed on monitor or printed on paper. A **computer graphics system** consists of a computer to store and process images, input & output devices and a graphics software to process graphic images. The software package is used in computer for drawing, coloring, shading and processing images.

A picture can be drawn on screen using mouse, tablet or light pen. The images printed on paper can also be stored in computer using scanners or digital camera. The graphics can be printed using plotters, inkjet or laser printers.

Computer graphics is widely used in printing, product designing and manufacturing, research and entertainment. It is also used in business to display data graphically. It is also used to display different equipment and tools graphically in mechanical and electrical fields. Computer graphics is very popular in entertainment. It is used to create interactive animation of video games and special effects in the movies.

Q. Explain three categories of system software.

Three categories of system software are as follows:

1. Operating System

An **operating system** is a set of programs that manages all computer components and operations. A computer cannot do anything without operating system. Operating system must be installed on every computer. Users interact with the computer through operating system. Linux and Windows are examples of operating system software.

2. Utility Programs

A **utility program** is a type of system software that is used for effective management of computer system. The user can use utility program to perform maintenance tasks related to different devices and programs. The utility program keep the computer system running smoothly. Most operating systems include different built-in utility programs. The user can also buy stand-alone utility programs. Antivirus and file compressor are two examples of utility programs.

3. Device Drivers

A **device driver** is a program that is used to operate and control a device attached to computer. Device drivers are provided by manufactures of devices. The devices cannot function properly without device drivers.

Q. Write a short note on virus hoax.

Virus hoax are the false reports about the viruses that do not exist. Some users may believe a hoax to be true and may take some actions such as shutting down the network etc. Virus hoax typically is an email that uses technical terms to describe a new dangerous virus. It asks to user to avoid reading or downloading emails with particular subjects etc.

Q. What is copyright infringement? Mention the criminal offenses related to copyright and its exception.

Copyright Infringement

Copyright infringement occurs when original works such as paintings, books, film, software or music is reproduced without permission from the copyright owners. It also occur when plays and films are performed without permission from the copyright owners. The reproduction of a part of very distinctive and original work is also an example of copyright infringement.

Criminal Offenses related to Copyright

Criminal offences include sale, importation or distribution of infringing reproductions. The ownership of equipment used to make infringing copies of copyright material is also an offence. The criminal actions can be taken against people or organizations that infringe copyright. The type of action depends on the nature of infringement.

Exceptions to Copyright

There are some exceptions to copyright. The exceptions allow some people to make copies of the work in certain situations without permission from the owner. For example, the students can make copies of single article from journals or chapters from book for study purposes. A person can reproduce a work for criticism or review. The news reporting is also allowed to be reproduced. Similarly, computer programs are reproduced in making backups.

Q. Write a short note on software copyright.

Software Copyright

The permission given by a software-developing company or person to use the software is called copyright. Any software is the property of the person who develops it. It is his right to allow anybody or organization to use his software. This permission is given when a person or organization purchases this software.

Good software takes a lot of time, cost and effort to build. It should not be used without the permission of the developer. Copyright laws ensure that no body should be allowed to use any software without getting license from the developer.

The software companies normally distribute software on CD-ROM, which can easily be copied on more than computers. In the countries like Pakistan, there is no implementation of copyright laws, which makes it more difficult for software companies to develop good software because they cannot get the reward of their work.

Q. What types of work are protected by copyright?

The copyright is applied to all original work. It includes literary, musical, dramatic or artistic work. The books, paintings, photographs, movies, dramas, radio programs and music is protected by copyright. Computer programs are also protected by copyright. The copyright also protects the sounds recordings such as cassettes, CDs and tapes etc.

Q. Write a note on computer crime.

Computer Crime

Computer crime is a type of crime that is committed by using computer technology. It requires special knowledge and expert use of computer technology. Computer have been used in different types of crimes such as theft, fraud, kidnapping and murder etc.

Computer systems themselves can be the targets of attack. A hacker may break into a computer system to commit a crime. Some serious computer crimes are committed in the banking and financial organization. Banks store the records in computers and a hacker may access the computer and manipulate the records for false purpose. The money can be illegally transferred to different accounts etc.

Q. Compare Windows operating system to the text-based disk operating system (DOS).

The difference between Windows and DOS is as follows:

Windows	DOS
1. Windows is graphical operating system.	1. DOS is command-line operating system.
2. Windows is easy to learn.	2. DOS is difficult to learn.
3. Windows supports multi-tasking.	3. DOS supports single-tasking.
4. Windows is a multi-user operating system.	4. DOS is a single-user operating system.
5. Windows supports multi-processing.	5. DOS supports single-processing.
6. Windows provides plug and play facility.	6. DOS does not provide plug and play facility.
7. Windows requires more powerful hardware to run.	7. DOS requires less powerful hardware to run.
8. Windows supports the use of keyboard and mouse.	8. DOS supports the use of only keyboard.
9. Windows requires more memory space to be installed.	9. DOS requires less memory space to be installed.
10. It supports multimedia applications.	10. It does not support multimedia applications.
11. The size of Windows is bigger than DOS.	11. The size of DOS is smaller than Windows.

Q. Explain how to select, rename and delete files and folders in Windows.

Selecting a File or Folder

The following procedure is used to select a file or folder:

1. Click the desired file or folder to select it.
2. Press CTRL key and click on desired files or folders to select multiple files or folders.
3. Click **Edit > Select All** OR press **CTRL+A** to select all files and folders in a window.

Renaming a File or Folder

The following procedure is used to rename a file or folder:

1. Open **Windows Explorer.**
2. Right click the file or folder to be renamed. A popup menu will appear.
3. Click **Rename** option. A cursor will appear in file or folder name.
4. Type the new name and press **Enter.** The file or folder will be renamed.

Deleting a File or Folder

The following procedure is used to delete a file or folder:

1. Open **Windows Explorer.**
2. Select the file or folder to be deleted.
3. Press **Delete** key. A message will appear to confirm the deletion.
4. Click **Yes** button to delete the selected file or folder. The file or folder will move to the **Recycle Bin.**

Q. Write a short note on finding files in Windows.

Windows search feature makes it easy to search files and folders, printers, people and other computers on network. It also has an indexing service to maintain an index of all files on computer for faster searches. The user can specify several search criteria.

Searching a File

The following steps are performed to search a file in Windows:

1. Click on **Start** button. The Start menu will appear.
2. Select **Find** option from the menu. A new window will appear:
3. Enter appropriate words in the textboxes and click **Search** button. Window will start searching the required file.

The user can search the file using the following options:

- Files or Folders
- On the Internet
- People
- Using Microsoft Outlook

The user can also specify the location for searching the file using **Look in:** list box. The user can select a particular drive such as C:\ or D:\ etc. The user can also use other options on search pane for advance searching.

Q. Briefly state any three basic rules or conventions for files and folder names in MS-Windows

The file and folder names in Windows XP can be up to 255 characters long. They can include spaces and periods. The file and folder names cannot include the characters such as \ / : * ? " < >

Q. What is thesaurus? How is it used in MS Word?

The words with similar meanings are called **synonyms** and the words that have the opposite meanings are called **antonyms**. The book in which synonyms and antonyms of words are given is called **thesaurus**. Thesaurus is used to find out the synonyms and antonyms of words. Thesaurus can be used as follows:

1. Select **Tools > Language > Thesaurus** from menu bar. A list of meanings and synonyms are given on the windows.
2. Double-**click words in** Meanings **box** OR **click** Look Up **button for similar words.**
3. Double-**click words in** Replace with Synonym **box to view its synonyms.**

Q. Write a short note on spelling and grammar in MS Word.

Spelling and Grammar features helps user to correct any mistakes made when typing the document. Spell Check is a feature that checks for spelling errors in a document. When Spell Checker finds a sentence with spelling error, the error is underlined with a wavy red line. It can be useful in preventing mistakes. Spelling can be checked simultaneously with grammar. When Grammar Checker finds a sentence with grammatical error, the error is underlined with a wavy green line.

Q. Write a short not on footnotes and endnotes.

Footnotes and Endnotes are used to provide additional information about a word or phrase in a document. The text is marked with a small and superscripted number. The associated text of a footnote can be placed at the bottom of page or below the last paragraph on the page. An endnote can be displayed at the end of the section or at the end of the whole document. Both footnotes and endnotes are separated from the remainder of the text by a small horizontal line.

Q. Qasim lives at small village and is one of the few educated persons there. People frequently come to him to write applications, letters etc. Which computer program should Qasim use to write applications etc.? What would be the benefits over handwritten applications?

Qasim should use Microsoft Word to write applications, letters and other documents. It provides useful tools for creating all kinds of text documents. It provides many benefits over handwritten applications. For example, a document can be changed without retyping the entire document. A typing mistake can be corrected easily. A paragraph can be deleted without any trace. It is easy to insert word, sentence or paragraph in the middle of document.

Q. A small college is considering to use computers for accounts. Frequent calculation such as making totals, calculating averages, etc are involved in accounting. Which application program would you suggest the college should use to keep accounts data? What would be the benefits of using that application program?

Microsoft Excel should be used to keep accounts data in the college. Excel provides the facility to make totals, calculate averages and perform other calculations easily. It provides many benefits for storing and calculating accounts data. For example, it increases the ease and speed of calculations. It makes it easy to modify data and recalculate automatically. It can also display numeric data as a chart or graph.

Q. Consider the following worksheet from MS-Excel.

Write formula in E2,F2 and G2 to calculate the Gross pay (total pay), income tax (@5% of basic pay) and Net pay, respectively.

	A	B	C	D	E	F	G
1	Name	Basic Pay	Conv. Allowance	Medial Allowance	Gross pay	Income Tax(5% of Basic Pay)	Net Pay (Gross Pay – Income Tax)
2	Employee A	15000	2400	1500	=B2+C2+D2	=E2*5%	=E2-F2

Q. What is meant by file compression and how it is useful?

File Compression

File compression is a process of translating a file into coded format that occupies less space than the original file. The files cannot be used in compressed format. These files are decompressed to original format and then used. The most commonly used programs for compressing and decompressing files are WinZip and WinRAR etc.

Files compression is useful for the following reasons:

- It saves a lot of space on the disk.
- It saves times during sending data from one computer to other computer.

Q. Explain the advantages and disadvantages of Internet.

Some important advantages of Internet are as follows:

- **Information Search:** Internet contains information on all topics. People can search information on any topic. Search engines are used to search information on Internet.
- **E-Commerce:** E-Commerce means to carry out financial and business dealings using Internet. A person can deal with his customers throughout the world.
- **Online Results:** Internet provides the facility to display results of students on websites. Many colleges and universities provide online results. The students view the results from any part of world.
- **Online Shopping:** People can buy and sell good on Internet and can make payments using credit card numbers. The trend of E-Commerce is rapidly becoming popular.
- **Fast Communication:** Internet is a way of fast communication. People can communicate with one another in less time from any part of the world.
- **Job Search:** Internet is used to search different types of jobs all over the world. Many websites are developed that provide information to the people about job vacancies. Job seekers can also apply for the job using Internet.
- **Entertainment:** Internet provides a lot of entertainment to the people. The users can play online games, listen songs, watch movies and live matches etc. Many websites provides entertainment material. People can also download entertainment stuff.
- **Online Education:** The process of getting education through Internet is called online education. Many websites provides tutorials and lectures on different subjects and topics. Some websites allow the users to download these tutorials. It is a fast and cheaper way of educating a large number of people.
- **Research:** Internet provides many facilities for research work. It contains detailed information on different topics. The researchers can find the required information on Internet. They can also interact with other researchers in the world to share knowledge and get guidance from them.
- **News:** Most newspapers have their website. Latest news and interviews are provided on these websites.
- **Search Engines:** Search engine is a website that provides the facility to find required websites on a particular topic. You can find thousands of websites about any topic.

Disadvantages of Internet

Some important disadvantages of Internet are as follows:

- **Hacking:** Hacking is one of the most important disadvantages of Internet. The hackers access the data stored on computers across Internet. They can use this data illegally or even destroy it.
- **Immorality:** Internet contains a large number of immoral websites. These websites contains such material that is against the moral values of our society. These websites are damaging the character of young people.

- **Security Problems:** Internet has created many security problems. Important data can be hacked on Internet. Hackers also damage different websites and delete their contents. They also retrieve critical data of different organizations and governments.
- **Viruses:** Internet is the most important source of spreading computer viruses. People spread viruses using Internet and emails. Many websites also contain different viruses that are copied to the computers when the users visit these websites.
- **Wastage of Time:** Many people use Internet without any positive purpose. The young people waste their time in chatting. It affects their performance and makes them inefficient.
- **Cyber Crime:** Internet is a source of many cyber crimes. People use Internet for negative activities. They hacks the credit card numbers of the people and use them for shopping. Some people use Internet to spread illegal and immoral material. Many governments are introducing laws to stop cyber crimes.

Q. Write six primary domains for US international sites.

The six primary domains for US international sites are as follows:

.com	Commercial
.edu	Educational
.gov	Government
.mil	Military
.net	Network
.org	Organization

Q. Define data address register (DAR).

Data address register provides an operand address to the memory unit when the microprocessor has to access memory during execution phase of an instruction.

Q. Why was the OSI model developed?

OSI model was developed to facilitate a communication system in which equipment from different vendors can communicate with each other. It consists of seven layers that describe how a computer can communicate to another computer over a network. It was developed by **International Standads Organization (ISO)** in early 1970s.

Q. Identify the OSI level at which each of the following operates.

- Bridge - data link layer of the OSI model
- Repeater - physical layer
- Router - network layer
- Gateway - transport layer or above

Papers of All Boards (Previous Year)

NOTE: The solutions of all question papers are available in different chapters of the book. However, you can contact us at info@itseries.com.pk in case of any problem.

Faisalabad Board (Annual Examination, 2011)

Time : 20 Minutes OBJECTIVE Marks:15

Note: Write answers to the questions on the objective answer sheet provided. Four possible answer (A),(B),(C) and (D) to each question are given. Which answer you consider correct, fill the circle of A),(B),(C) or (D) with pen ink to each question on the answer sheet provided.

1. **Which key removes the character to the right of the cursor?**
   a. Esc (b) Delete c. Backspace d. Alt
2. **OSI referencing model exactly has_____ layers.**
   a. 6 (b) 7 c.8 d. 9
3. **Physical path that connects the source and receiver:**
   a. Communication Channel b. Decoder c. Encoder d.CPU
4. **CAL stands for::**
   (a) Computer Aided Learning b. Computer Assist Learning
   c. Computer Added Learning d. Computer Aided Language
5. **Which component is used to connect different parts of computer together?**
   a. RAM b. Control Unit c. Main memory (d) Computer Bus
6. **Temporary storage area within CPU is called:**
   (a) Registers b. Bus c RAM d. ROM
7. **An important characteristic of RAM is that it is:**
   a. Read only b. Writes only c. Nonvolatile (d) Volatile
8. **Which of the following memories allows simultaneous read and write operations?**
   a. ROM (b) RAM c. EPROM d. None
9. **ALU has_____ units:**
   (a) 2 b. 3 c. 4 d. 5
10. **The measurement of things such as fingerprints and retinal scans used for security access is called:**
    (a) Biometrics b. Bio-measurement
    c. Computer security d. Smart weapon machinery
11. **GUI stands for:**
    (a) Graphical User Interface b. General User Interrupt
    c. Grayed User Interface d. Grayed User Interface
12. **The name of the document is displayed:**
    a. Border b. Menu bar (c) Title bar d. Scrollbar
13. **The extension of MS-Excel file is:**
    (a) xls b. doc c. jpg d. wrd
14. **How many types of addressing scheme?**
    a. 3 (b) 2 c. 5 d. 8
15. **Copying data from Internet to computer is called:**
    a. Uploading (b) Downloading c. Transferring d. Downlinking

SUBJECTIVE
Section-I

Time: 02:10 Hrs Marks: 60

Write short answers of any eighteen parts from question No.1, 2 and 3. Write Question No. and its part while answering.

Q.1

i. What do you know about pen-based system? ii. Define system development life cycle.
iii. Why resolution is important for display screen?
iv. Define OSI model. Enlist the different layers of OSI model.
v. What is WAN? Explain briefly. vi. What do you know about gateway?
vii. What is the concept of start signal in asynchronous data transmission?
viii. What is refraction? ix. Define simplex mode of data transmission.

Q.2

i. Define Desktop publishing. ii. How computer can be used in marketing?
iii. Write down the names of popular operating system.
iv. Distinguish between low level and high level languages.
v. Define compiler. vi. What are interrupts? vii. Define ROM.
viii. Define window. ix. What is the use of recycle bin?

Q.3

i. Define security. ii. Differentiate between HTTP and FTP.
iii. What do you mean by data protection? iv. Distinguish between cut and copy.
v. State the use of clipboard in MS-Word. vi. Describe absolute referencing.
vii. Define Spreadsheet. viii. How can we connect internet?
ix. Define WWW.

Section- II (Attempt any THREE questions. Each question carries 08 marks)

Q.4. What is keyboard? Describe enhanced keyboard and its segments.
Q.5. Discuss different network models. Also describe their advantages and disadvantages.
Q.6. What do you mean by communication channel? Describe any three types in detail.
Q.7. Explain the architecture of computer system. Which components are included in the architecture of modern stored program machine?
Q.8. What is computer virus? Discuss different types of computer viruses.

Lahore Board (Annual Examination, 2011)

SUBJECTIVE
Section-I

Write short answers of any eighteen parts from question No.1, 2 and 3. Write Question No. and its part while answering.

Q.1

i. Define package software with examples. ii. What is digital camera?
iii. Describe pilot conversion. iv. What is workgroup computing?
v. State some uses of LAN. vi. How does CSMA/CD work?
vii. Explain characteristics of analog signal. viii. What is Unicode? ix. Write about external modem.

Q.2

i. What do you know about Computer Aided Learning? ii. Explain the concept of e-commerce.
iii. Why RAM is called volatile memory? iv. Describe some activities of control unit.
v. What is Zero-Address Instruction format? vi. What is mail merge?
vii. Explain the function of Instruction Pointer Register.
viii. List out the different objects of windows operating system.
ix. What is meant by primary partition?

Q.3

i. Write about biometrics. ii. Define backup.
iii. Give some causes of virus. (Any two) iv. List out some uses of word processor.
v. Distinguish between cut and copy. vi. List three benefits of spreadsheet.
vii. Differentiate between active cell and passive cell. viii. Describe ARPANET.
ix. Define the term uploading and downloading.

Section- II (Attempt any THREE questions. Each question carries 08 marks)

Q.4. Write notes on: i. Laser printer ii. Flatbed Plotter iii. Hard disk

Q.5. Define ring topology. Explain its working with diagram. Discuss its advantages and disadvantages.

Q.6. What is meant by encoding of data? Explain different coding scheme to represent data.

Q.7. Define language processors. Explain different types of language processor.

Q.8. What is meant by data security? Discuss some ways of data security violation.

Gujranwala Board (Annual Examination, 2011)

SUBJECTIVE

Section-I

Write short answers of any eighteen parts from question No.1, 2 and 3. Write Question No. and its part while answering.

Q.1

i. What is system? List its different components.
ii. Enlist different technologies used in flat-panel display.
iii. What is application software? iv. What do you know about workgroup computing?
v. Define the term EXTRANET. vi. What is bus topology?
vii. What is meant by encoding of data? viii. Define the term Modulation. Explain with example.
ix. What is full duplex mode of data transmission?

Q.2

i. State the purpose of ATM? ii. Define the term video conferencing?
iii. Define bus interconnection. iv. What is SRAM?
v. State the use of parallel port. vi. Why does machine language program execute faster?
vii. Define stack. viii. Why a computer needs an operating system? ix. Define event.

Q.3

i. Name different types of viruses. ii. Explain data security.
iii. What is Redlof? iv. Describe Microsoft Word.
v. Distinguish between save and save as option. vi. Write basic features of spreadsheet software.
vii. What is merge and center option in Excel? viii. What is email?
ix. Explain the importance of search engine.

Section- II **(Attempt any THREE questions. Each question carries 08 marks)**

Q.4. What are impact printers? Explain the types of impact printers.

Q.5. Explain different network models. What are the advantages and disadvantages of each model?

Q.6. Explain different data types with examples.

Q.7. Describe language processors or translator and their use. Discuss different types of language processors.

Q.8. Define virus. Discuss different types of computer viruses.

Multan Board (Annual Examination, 2011)

SUBJECTIVE

Section-I

Write short answers of any eighteen parts from question No.1, 2 and 3. Write Question No. and its part while answering.

Q.1

i. What is plotter? ii. Who is a programmer? iii. Define feasibility study.
iv. Define Intranet. v. What do you know about host computer? vi. State the purpose of bridge.
vii. What do you mean by modulation? viii. What is wire pair?
ix. Define simplex mode of transmission.

Q.2

i. What is video conferencing? ii. Explain weather forecasting.
iii. What different functions are carried in ALU? iv. Define the term Interrupt.
v. What is the concept of memory address?
vi. How is data transferred from processor to main memory?
vii. Differentiate between compiler and interpreter.
viii. What is plug and play feature of windows? ix. Explain the different events of mouse.

Q.3

i. Define security. ii. What is logic bomb? iii. Why is backup important?
iv. What is Text Editor? v. What is page formatting? vi. Define worksheet.
vii. What do you understand by named ranges? viii. What is DNS addressing?
ix. What does URL mean?

Section- II **(Attempt any THREE questions. Each question carries 08 marks)**

Q.4. What is impact printer? Discuss different types of impact printers.

Q.5. Define Topology. Describe any two topologies with the help of diagram. Write their advantages and disadvantages.

Q.6. Define Guided media. Explain three Guided media.

Q.7. What is Instruction format? Explain various Instruction Code Formats.

Q.8. Explain different causes of computer virus. How virus is activated?

Rawalpindi Board (Annual Examination, 2011)

SUBJECTIVE

Section-I

Write short answers of any eighteen parts from question No.1, 2 and 3. Write Question No. and its part while answering.

Q.1

i. Define application software. ii. What do you mean by QWERTY?
iii. Define Barcode. iv. State the purpose of router? v. Define the term client.
vi. Differentiate between INTRANET and EXTRANET.
vii. Define broadband. viii. What is Communication Satellite?
ix. Define refraction.

Q.2

i. What is the use of image processing system? ii. Describe Computer Aided Design.
iii. What is Instruction set? iv. Define Assembler.
v. Define port. vi. What is the purpose of I/O instructions?
vii. Describe cache memory? Viii. What do you mean by plug and play?
viii. Define partition.

Q.3

i. List some important antivirus program
ii. Explain the concept of activation of virus. iii. How can virus damage the computer?
iv. Define Insertion and overtype mode in Microsoft Word.
v. What is meant by indent in Microsoft word? vi. Differentiate between active cell and passive cell in excel
vii. What do you know about absolute reference? viii. Enlist the names of five search engine.
ix. What is meant by uploading and downloading?

Section- II (Attempt any THREE questions. Each question carries 08 marks)

Q.4. What is software? Describe different categories of software.
Q.5. Define Network. Explain different types of Network models.
Q.6. What is data transmission mode? Explain its types with examples.
Q.7. What is instruction set? Explain different types of instructions that a CPU can perform.
Q.8. Briefly discuss different security threats to data security. What are the solutions to these threats?

DG Khan Board (Annual Examination, 2011)

SUBJECTIVE

Section-I

Write short answers of any eighteen parts from question No.1, 2 and 3. Write Question No. and its part while answering.

Q.1

i. How is hardware different from software? ii. Define utility program
iii. What is touch screen? iv. List three benefits of computer network.
v. What is ring topology? vi. State the use of repeater. vii. What is coaxial cable?
viii. What is Uni code? ix. What is signal?

Q.2

i. What is On-line education? ii. Describe the use of computer in stock exchange.
iii. What is robot? iv. Explain data bus.
v. Differentiate between SRAM and DRAM. vi. Define assembler.
vii. What do you mean by plug and play? Viii. Define Graphical user interface operating system.
ix. State the use of My Computer folder.

Q.3

i. Describe Trojan horse. ii. What is antivirus program?
iii. Why is backup important? iv. Distinguish between cut and copy.
v. Define font and its use vi. List different types of data in Excel. vii. Distinguish between formula and function.
viii. Differentiate between URL and website. ix. Describe the use of web server.

Section- II **(Attempt any THREE questions. Each question carries 08 marks)**

Q.4. What the use of plotter? Explain its different types.

Q.5. Define star topology. Explain its working with diagram. Discuss its advantages and disadvantages.

Q.6. Write a note on:

a. Microwave b. Communication Satellite c. Intranet and Extranet

Q.7. What is Operating system? Explain its any six functions.

Q.8. Define virus. Explain different causes of computer virus.

Sargodha Board (Annual Examination, 2011)

SUBJECTIVE

Section-I

Write short answers of any eighteen parts from question No.1, 2 and 3. Write Question No. and its part while answering.

Q.1

i. How is hardware different from software? ii. Define utility program
iii. What are function keys? iv. What is workgroup computing?
v. Define extranet. vi. State the purpose of FTP.
vii. Define analog signal. viii. What is ASCII code?
ix. Compare simple and half duplex mode of transmission.

Q.2

i. Describe computer based training. ii. Differentiate between CAD and CAM.
iii. What is address bus? iv. What is DRAM?
v. Explain the Fetch-Decode-Execute cycle of CPU. vi. Explain the working of interpreter.
vii. Define DMA. Viii. What is Internet explorer? ix. Define command line operating systems.

Q.3

i. Define security. ii. State the purpose of data protection legislation.
iii. Give some causes of virus(any two) iv. Define page formatting.
v. State the use of clipboard in MS Word. vi. Differentiate between worksheet and work book
vii. Distinguish between formula and function.
viii. Explain TCP/IP. ix. State the use of Web browser.

Section- II **(Attempt any THREE questions. Each question carries 08 marks)**

Q.4. What are pointing devices? Explain any four pointing devices.

Q.5 Explain different devices used to connect network of computer.

Q.6. What is transmission mode? Explain its types with examples.

Q.7. Explain Fetch-Decode-Execute cycle of CPU in detail.

Q.8. Define virus. Explain different types of computer viruses.

AJK Board (Annual Examination, 2011)

SUBJECTIVE

Section-I

Write short answers of any eighteen parts from question No.1, 2 and 3. Write Question No. and its part while answering.

Q.1

i. What is Trackball? ii. Differentiate between softcopy and Hard copy.
iii. Define MICR. iv. Define Extranet.
v. Write the functions of network layer. vi. Define www. vii. What is Unicode?
viii. How data is represented in computer? ix. What is fiber optics?

Q.2

i. Describe computer based training. ii. How computer can be useful in weather forecasting?
iii. Define computer architecture. iv. List out different units of CPU.
v. Define bus interconnection. vi. Describe EEPROM.
vii. Write the purpose of I/O instruction. Viii. What is Internet Explore?
ix. Explain the meaning of plug and play.

Q.3

i. Define biometrics. ii. Why is data security important?
iii. Define password. iv. State the meaning of default.
v. What is mail merge? vi. Write basic features of spreadsheet software.
vii. Define function in excel.
viii. Describe the use of web server.
ix. What is the purpose of IP addressing?

Section- II (Attempt any THREE questions. Each question carries 08 marks)

Q.4. What is information technology? Discuss in detail with at least 2 examples.
Q.5. Explain different components of local area network.
Q.6. Define transmission mode. Explain its types with example.
Q.7. What is ROM? Explain its different types with brief description.
Q.8. Discuss different types of viruses. How a virus damage computer?

Bahawalpur Board (Annual Examination, 2011)

SUBJECTIVE

Section-I

Time: 02:10 Hrs **Marks: 60**

Write short answers of any eighteen parts from question No.1, 2, 3 and 4. Write Question No. and its part while answering.

Q.1

i. What do you know about printer? ii. Describe Phased Conversion.
iii. Define Application Software. iv. Define Computer Network.
v. What is Bus topology? vi. Define Internet.
vii. Define refraction.

Q.2

i. How does Microwave System Works?
ii. Define Modulation and Demodulation.
iii. What do you know about On-Line education?
iv. How computers can be used in Marketing?
v. What do you know about Bus-Interconnection?
vi. Why ROM is called Non-Volatile Memory?
vii. What is the concept of Stored Program Machine?

Q.3

i. Explain the functions of Input / Output Unit.
ii. Describe the role of Main memory in Computer System?
iii. What do you know about Multitasking Operating System? iv. Define Partition.
v. Write about Biometrics.
vi. How virus is activated?
vii. State the purpose of password?

Q.4

i. What is the purpose of Word Processor?
ii. State the use of Clipboard in MS-Word.
iii. Define formula in Excel.
iv. Differentiate between Active Cell and Passive Cell.
v. Describe Arpanet.
vi. Define Website.

Section- II (Attempt any THREE questions. Each question carries 08 marks)

Q.4. What is SDLC? Explain different phases of SDLC.

Q.5. What is Network Topology? Explain the working, advantages and disadvantages of Star Topology with a diagram.

Q.6. Define Modem. Write down the types and features of Modem.

Q.7. Describe Language processor or Translator. Discuss different types of language processor.

Q.8. Explain different causes of computer virus.

Rawalpindi Board (Annual Examination, 2010)

SUBJECTIVE

Time: 02:10 Hrs **Marks: 60**

Note: Attempt any three questions from Section II. All question carry equal marks.

Q.2. Write a short answers of any eighteen of the following question.

i. Define Digital Convergence.
ii. What is Customized software?
iii. Why is resolution important when using a scanner?
iv. Name different connectivity devices.
v. What is the purpose of terminators in bus topology?
vi. Define token.
vii. List some features of modem.
viii. Why modulation is necessary?
ix. What is column?
x. What do you mean by computer simulation?
xi. What is the use of computer in airline system?
xii. What is cache memory?
xiii. List out different types of system buses?
xiv. Why data bus is used?
xv. What is computer architecture?
xvi. Distinguish between arithmetic and logic operations.
xvii. What is paragraph formatting?
xviii. What is the difference insert mode and overtype mode.
xix. Define security.
xx. How virus is activated?
xxi. What is meant by privacy issue?

xxii. Define operating system. xxiii. What is spreadsheet?
xxiv. What is the difference between relative and absolute reference?
xxv. What is IP address xxvi. State web publishing. xxvii. What is web hosting?

Section- II (Each question carries 08 marks)

Q.3. Write a note on the following.
i. Digital cameras ii. Laser printer iii. Flatbed plotter iv. Hard disk
Q.4. Define topology. Explain working of bus and ring topology with diagram.
Q.5. Write a note on the following.
i. Digital signals ii. Broadband iii. Asynchronous Transmission iv. Fiber optics
Q.6. What is ROM? Discuss different types of ROM.
Q.7. How can we protect computer system from virus? Explain different types of viruses.

Bahawalpur Board (Annual Examination, 2010)

SUBJECTIVE

Note: Attempt any three questions from Section II. All question carry equal marks.

Q.2. Write a short answers of any eighteen of the following question.

i. Define SVGA. ii. Differentiate between Hypermedia and Multimedia?
iii. Define Raster Graphics iv. Name different LAN protocols.
v. Define dedicated server vi. What are Routers?
vii. Why Unicode is superior to ASCII code? viii. Define base band ix. What is signal?
x. Write some application of robots in industry. xi. How computers can be useful in on-line education?
xii. What is meant by computer architecture? xiii. Why RAM is called Random Access Memory?
xiv. What is the function of Address Bus? xv. What is the concept of Stored Program Machine?
xvi. How is data transferred from Peripheral devices to computer? xvii. What is paragraph formatting?
xviii. Define insert mode and overtype mode. xix. Write about biometrics.
xx. How can virus damage computer? xxi. What is the purpose of password?
xxii. Write about recycle bin. xxiii. Define spreadsheet.
xxiv. How a formula is written in Excel? xxv. Explain uploading and downloading
xxvi. How web pages are created. xxvii. List four search Engines.

Section- II (Each question carries 08 marks)

Q.3. Describe different categories of Computer Software.
Q.4. Explain different components of local area network.
Q.5. What is meant by Encoding of data? Explain different coding schemes to represent data in computer.
Q.6. Explain architecture of Computer system. Also draw its diagram.
Q.7. Discuss different types of viruses.

Multan Board (Annual Examination, 2010)

SUBJECTIVE

Note: Attempt any three questions from Section II. All questions carries equal marks.

Q.2. Write a short answers of any eighteen of the following question.

i. What hardware? ii. What do you know about printer?
iii. Write name of any three input devices. iv. What is Telecommunication?

v. Define bus topology.
vi. List some benefits of Computer Networks.
vii. What do you mean by internal modem?
viii. What is fiber optics?
ix. Differentiate between Encoder and Decoder.
x. What is Robot?
xi. How computer can be useful for Weather forecasting?
xii. Which functions are performed by logic unit of CPU?
xiii. What is DRAM?
xiv. What are interrupts?
xv. Why compiler is used?
xvi. What is port?
xvii. Explain character formatting.
xviii. Define Word Processor.
xix. Define security.
xx. List some important antivirus programs.
xxi. What is password? Give example.
xxii. Discuss important events of Mouse.
xxiii. How are Rows and columns identified in a spreadsheet?
xxiv. Discuss some basic features of spreadsheet software.
xxv. List any four search engines.
xxvi. What is Internet?
xxvii. Which protocol is heart of Internet?

Section- II (Each question carries 08 marks)

Q.3. What is Computer? Discuss primary components of computer system.
Q.4. Define Local area network. Discuss different components used in Local area network.
Q.5. What is data communication? Explain the basic components of Communication network.
Q.6. Define CPU Register. Write usage of any four special purpose registers.
Q.7. How can we protect the computer system from virus? Explain briefly.

Sargodha Board (Annual Examination, 2010)

SUBJECTIVE

Note: Attempt any three questions from Section II. All question carry equal marks.

Q.2. Write a short answers of any eighteen of the following question.

i. What is Information Technology?
ii. Write a short note on CRT monitors.
iii. Write the purpose of plotter.
iv. Write a note on gateway.
v. Define network topology
vi. List out layers of OSI model.
vii. Differentiate between Half duplex and Full duplex mode of transmission.
viii. Define base band.
ix. Describe Synchronous data transmission.
x. How computer can be used in departmental stores?
xi. What is meant by Computer-based training?
xii. Define SRAM.
xiii. What do you know about cache memory?
xiv. Describe the purpose of I/O instruction.
xv. What is main difference between compiler and interpreter?
xvi. Define execution instruction.
xvii. What is paragraph formatting?
xviii. Differentiate between insert mode and overtype mode.
xix. List the causes of virus.
xx. Why is data security important?
xxi. Explain privacy issue
xxii. Define desktop.
xxiii. What is cell in MS-Excel?
xxiv. Write formula which sums values from A1 to A5?
xxv. Define Email address.
xxvi. How can we connect to Internet?
xxvii. What is the use of web browser?

Section- II (Each question carries 08 marks)

Q.3. Define an impact printer. Explain any two types of impact printer.
Q.4. Define information network. Describe client server model with its advantages and disadvantages.
Q.5. What is data transmission mode? Explain its three types with examples.

Q.6. Explain architecture of Computer system. Also draw its diagram.
Q.7. Discuss different types of data backup.

Gujranwala Board (Annual Examination, 2010)

SUBJECTIVE

Note: Attempt any three questions from Section II. All question carry equal marks.

Q.2. Write a short answers of any eighteen of the following question.

i. What is customized software?
ii. Define magnetic strip.
iii. What do you know about programmer?
iv. Describe dedicated server.
v. Define bridges.
vi. What do you know about Gopher?
vii. Define analog signal.
viii. What is Unicode?
ix. Define communication satellite.
x. What is robot?
xi. How computer can be useful in weather forecasting?
xii. What is data bus?
xiii. Define motherboard.
xiv. What are control transfer instructions?
xv. What is an interpreter?
xvi. What does DRAM use more power?
xvii. What is character formatting?
xviii. Explain the use of undo and redo.
xix. List different types of viruses.
xx. How is security maintained on a computer?
xxi. What is the function of antivirus?
xxii. List different objects of Windows OS.
xxiii. Write different types of data in Excel.
xxiv. What is the procedure to enter data in a cell?
xxv. Write about website?
xxvi. Why is the search engine used?
xxvii. How do we connect to the internet?

Section- II (Each question carries 08 marks)

Q.3. Define display screen. Explain any two type of display screen.
Q.4. Describe different network connectivity devices used to connect computer network.
Q.5. Explain different coding schemes to represent data in computer.
Q.6. Explain the architecture of computer system. Explain its major components.
Q.7. Briefly discuss different security threats to data security. What are solutions to these threats?

Lahore Board (Annual Examination, 2010)

SUBJECTIVE

Note: Attempt any three questions from Section II. All question carry equal marks.

Q.2. Write a short answers of any eighteen of the following question.

i. Define an Information Technology?
ii. What are non-impact printers?
iii. List out different components of SDLC.
iv. What do you know about workgroup computing?
v. Differentiate between star and bus topology?
vi. What is client /server network model?
vii. Describe asynchronous data transmission.
viii. What do you know about full duplex mode of data communication?
ix. How is data represented in computer?
x. What is robot?
xi. How can office support system help in office automation?

xii. List some activities of control unit.
xiii. Define cache memory.
xiv. Differentiate between SRAM and DRAM.
xv. What is Instruction set?
xvi. Define Interpreter.
xvii. What is mail merge?
xviii. List some uses of word processor.
xix. List some important antivirus programs.
xx. How virus is activated?
xxi. What is data security?
xxii. Give some examples of command line operating system.
xxiii. What is active cell in MS-Excel?
xxiv. Differentiate between formula and functions in Excel.
xxv. Describe the use of Web server.
xxvi. Explain TCP / IP.
xxvii. What is the difference between uploading and downloading?

Section- II (Each question carries 08 marks)

Q.3. Briefly Explain the different data entry services.
Q.4. Write short notes on the following.
i. Routers ii. MAN iii. Transport layer iv. Data link layer
Q.5. Define data communication mode. Explain different types of data communication modes.
Q.6. Briefly describes different general purpose registers.
Q.7. Explain different causes of computer virus. How can protect the computer system from virus?

Faisalabad Board (Annual Examination, 2010)

SUBJECTIVE

Note: Attempt any three questions from Section II. All question carry equal marks.

Q.2. Write a short answers of any eighteen of the following question.

i. What is application software?
ii. Define barcode.
iii. Define basic unit of data storage.
iv. Describe different types of network models.
v. What are repeaters?
vi. Define communication software?
vii. What is digital signal?
viii. How is data represented in computer?
ix. Define fiber optics.
x. Define E-Commerce.
xi. What is On-line education?
xii. What is meant by language processor?
xiii. Define port.
xiv. What is DMA?
xv. Differentiate between RAM & ROM.
xvi. Narrate some activities of control unit.
xvii. What is mail merge option in Word?
xviii. Describe the use of undo and redo commands.
xix. What is antivirus software?
xx. Explain data security.
xxi. Why data protection is important?
xxii. Define desktop .
xxiii. List two benefits of spreadsheet?
xxiv. Differentiate between absolute and relative reference.
xxv. What is www?
xxvi. Differentiate between HTTP and FTP.
xxvii. What does URL mean?

Section- II (Each question carries 08 marks)

Q.3. What is non-impact printer? Discuss different types of non-impact printers.
Q.4. Write the differences between LAN and WAN.
Q.5. Explain different types of guided media.
Q.6. Explain the fetch-decode-execute cycle of CPU with the help of diagram.
Q.7. Define data security. Discuss different security threats. Also give their solution.

DG Khan Board (Annual Examination, 2010)

SUBJECTIVE

Note: Attempt any three questions from Section II. All question carry equal marks.

Q.2. Write a short answers of any eighteen of the following question.

i. What is the difference between hardware and software?
ii. What is system software?
iii. Write advantages of non-impact printers?
iv. What is router?
v. Differentiate between intranet and extranet.
vi. What is email?
vii. What is data communication?
viii. Write a note on modem.
ix. What is meant by synchronous transmission?
x. What do you know about ATM?
xi. How computers assist us in simplifying our work?
xii. What is CPU?
xiii. What are system buses?
xiv. List some general purpose register.
xv. What is compiler?
xvi. Why RAM is called volatile memory?
xvii. What is page formatting?
xviii. Distinguish between header and footer in Word.
xix. What is Trojan horse?
xx. What do you know about copyright act?
xxi. Why data protection is important?
xxii. What is meant by multitasking?
xxiii. Define cell address.
xxiv. What is the difference between workbook and worksheet?
xxv. What is DNS addressing?
xxvi. List five search engines?
xxvii. Describe ISP.

Section- II (Each question carries 08 marks)

Q.3. Define source data entry devices. Explain OCR, OMR and MICR in detail.
Q.4. Define computer network. Explain any three devices used to connect network of computers.
Q.5. Explain different types of Guided Media.
Q.6. Define an operating system. Discuss different functions of operating system.
Q.7. Briefly describes different security threats to data security. What are the solutions to these threats?

AJK Board (Annual Examination, 2010)

SUBJECTIVE

Note: Attempt any three questions from Section II. All question carry equal marks.

Q.2. Write a short answers of any eighteen of the following question.

i. Define an application software?
ii. What is dedicate Fax Machine?
iii. What is flatbed plotter?
iv. What is client / server network?
v. Explain the term network topology.
vi. Differentiate between intranet and extranet.
vii. What is meant by encoding of data?
viii. Describe parallel transmission.
ix. List out different components of communication network.
x. How bank can benefit from the use of computer?
xi. List some important features of computer?
xii. Why is ROM known as non-volatile?
xiii. Distinguish between arithmetic and logic operations.
xiv. What is port?
xv. What is an instruction set?
xvi. Write any four functions of operating system?
xvii. List out some uses of word processor.
xviii. Why font is used in MS-Word?
xix. What is computer virus?
xx. Briefly explain boot sector virus.
xxi. What is password?
xxii. Write the purpose of operating system.
xxiii. What is spreadsheet?

xxiv. What is function? List any two functions of MS-Excel. xxv. What is Internet?
xxvi. What is DARPA? xxvii. Write a short note on ISP.

Section- II **(Each question carries 08 marks)**

Q.3. Define printer. Explain different types of non-impact printers (at least three)
Q.4. What is email? State its advantages and disadvantages?
Q.5. What is data communication? Describe basic components of Communication network.
Q.6. Construct the diagram of computer architecture also describes the different components included in the architecture.
Q.7. What is Computer Virus? Explain different computer viruses.

Bahawalpur Board (Annual Examination, 2009)

SUBJECTIVE

Time: 02:10 Hrs **Marks: 60**

Note: Attempt any three questions from Section II. All question carry equal marks.

Q.2. Write a short answers of any eighteen of the following question.

i. What is IT? ii. What is digital camera? iii. What is computer?
iv. What is network? v. What is workgroup? vi. What is bus topology?
vii. What is message? viii. What is meant by sender? ix. Define the term encoder.
x. What is e-commerce? xi. What is ATM? xii. What is CPU?
xiii. What is Control unit? xiv. What is RAM? xv. What is cache memory?
xvi. Define the term byte. xvii. What are causes of virus? xviii. What is Email?
xix. Write the name of two antivirus programs. xx. Define OS.
xxi. What is computer desktop? xxii. What is MS-Word?
xxiii. What is font ? xxiv. What is cell? xxv. What is Microsoft Excel?
xxvi. What is Internet? xxvii. Define the term Extranet.

Section- II **(Each question carries 08 marks)**

Q.3. Discuss different types of printers.
Q.4. What is network topology? Write the names of topologies. Discuss star topology with diagram.
Q.5. What is data transmission mode? Explain its different type.
Q.6. What is memory? Explain different types of ROM.
Q.7. Explain different features of Windows OS.

Multan Board (Annual Examination, 2009)

SUBJECTIVE

Note: Attempt any three questions from Section II. All question carry equal marks.

Q.2. Write a short answers of any eighteen of the following question.

i. What do you know about Pen-based system? ii. Write some applications of IT.
iii. What are non-impact printers? iv. Define peer-to-peer network.
v. What is Telnet? vi. What is network topology?
vii. What is serial transmission?
viii. What do you know about Microwave transmission?
ix. What is communication media? x. What is computer aided design?
xi. What is robot? xii. Why RAM is called random access memory?

xiii. List some activities of control unit. xiv. Describe two address instruction formats.
xv. How data transferred from peripheral devices to computer?
xvi. What do you know about input / output devices? xvii. What is privacy issue?
xviii. What is Redlof? xix. Define extended partition. xx. What is GUI OS?
xxi. Define insert mode and overtype mode? xxii. What is Clipboard?
xxiii. Describe absolute reference?
xxiv. What is difference between active cell and passive cell? xxv. What do you know about copyright act?
xxvi. What is meant by IP addressing? xxvii. What is domain name?

Section- II (Each question carries 08 marks)

Q.3. What is input devices? Explain two input devices.
Q.4. Describe star and bus topology in detail.
Q.5. What are different types of data transmission? Explain Asynchronous Transmission and Synchronous Transmission.
Q.6. What is CPU? Discuss component of CPU.
Q.7. How can you protect the computer system from virus?

Lahore Board (Annual Examination, 2009)

SUBJECTIVE

Note: Attempt any three questions from Section II. All question carry equal marks.

Q.2. Write a short answers of any eighteen of the following question.

i. What do you mean by QWERTY? ii. What is Operating system? iii. What is data?
iv. What is FTP? v. What is Internet? vi. What is host computer?
vii. MAN stands for. viii. Name some bounded media. ix. What is digital signal?
x. What is Anti-virus software? xi. What is data security? xii. What are the caused of virus?
xiii. What is computer architecture? xiv. What is main memory? xv. What is DRAM?
xvi. What are interrupts? xvii. What is assembly language?
xviii. What is meant by Automatic Teller machine? xix. What is email?
xx. What are different operating systems? xxi. What is internet explore?
xxii. What is text editor? xxiii. What is Mail Merge? xxiv. What are functions?
xxv. What is formula? xxvi. What is website? xxvii. What does URL mean?

Section- II (Each question carries 08 marks)

Q.3. What is computer software? Explain its different types in detail.
Q.4. What is the difference between LAN and WAN?
Q.5. What is guided media? Explain its different types.
Q.6. What is computer? Explain the architecture of computer system with the help of diagram.
Q.7. Define virus. Write a note on any two viruses.

Faisalabad Board (Annual Examination, 2009)

SUBJECTIVE

Note: Attempt any three questions from Section II. All question carry equal marks.

Q.2. Write a short answers of any eighteen of the following question.

i. What is plotter? ii. What is meant by input devices? iii. What is System?
iv. What is Internet? v. Define www. vi. What is email?
vii. What is ASCII code? viii. What is meant by parallel transmission?

ix. List some important feature of computer. x. What is meant by CBT?
xi. What is CPU? xii. What is EPROM? xiii. What is Computer bus?
xiv. What is assembler? xv. What is main memory?
xvi. List different type of virus. xvii. List some anti-virus program. xviii. What is password?
xix. Define Desktop xx. Define window explorer. xxi. Define word processor?
xxii. Define header and footer. xxiii. What is cell and cell address?
xxiv. What is the difference between worksheet and workbook? xxv. What is web browsing?
xxvi. What is domain name? xxvii. List different components of data communication.

Section- II (Each question carries 08 marks)

Q.3. What is the usage of plotter? Explain different types of plotters.
Q.4. Define computer network. Explain different devices used to connect network of computer.
Q.5.What are different types of communication media? Explain any two media for each type.
Q.6. What is RAM? Explain different types of RAM.
Q.7. Discuss different causes of virus. How virus is activated?

Rawalpindi Board (Annual Examination, 2009)

SUBJECTIVE

Note: Attempt any three questions from Section II. All question carry equal marks.

Q.2. Write a short answers of any eighteen of the following question.

i. Why is CRT used in monitors? ii. What are different types of monitors?
iii. What are the basic units of data storage? iv. What is De-jure standard?
v. Define the term client. vi. What is Extranet? vii. What is ASCII code?
viii. What is simplex mode? ix. Define baseband.
x. What is the use of computer in airlines? xi. What is on-line education?
xii. What is interpreter? xiii. What is use of parallel port? xiv. What are CPU registers?
xv. What is control bus? xvi. What is assembly language?
xvii. List some important antivirus programs. xviii. What is Trojan horse?
xix. What is data security? xx. What are events of keyboard?
xxi. What do you mean by plug and play? xxii. What is Column?
xxiii. What is Page setup dialog box ?
xxiv. What is difference between active cell and passive cell? xxv. What are functions?
xxvi. What is news server? xxvii. What is the use of web browser?

Section- II (Each question carries 08 marks)

Q.3. What is non-impact printer? Describe the types of non-impact printer.
Q.4. Write any eight differences between LAN and WAN.
Q.5. Write a short note on modem and its types. Also describe the features of modem.
Q.6. What is RAM? Explain different types of RAM.
Q.7. Discuss different objects of Windows operating system.

D.G Khan Board (Annual Examination, 2009)

SUBJECTIVE

Note: Attempt any three questions from Section II. All question carry equal marks.

Q.2. Write a short answers of any eighteen of the following question.

i. What is the function of mouse? ii. What is trackball? iii. What is bar code?

iv. What is ring topology? v. What is WAN? vi. What is token passing?
vii. Define the term signals viii. What are digital signals? ix. What are analogy signals?
x. What are antivirus? xi. What is meant by password? xii. What is logic bomb virus?
xiii. What is CPU? xiv. What is control unit? xv. What is RAM?
xvi. What is address bus? xvii. What is segment register? xviii. What is internet explore?
xix. What is operating system? xx. What is meant by alignment? xxi. What is font?
xxii. What is worksheet? xxiii. What is MS-Excel? xxiv. What is Internet?
xxv. What is web page? xxvi. What is video conferencing? xxvii. What is E-commerce?

Section- II (Each question carries 08 marks)

Q.3. What is meant by input devices? Explain any two input devices.
Q.4. What is OSI model? Write the names of layers in this model. Briefly describe the function of Application layer in OSI model.
Q.5.What do you mean by communication channel? Describe any three types in detail.
Q.6. What is ROM? Explain different types of ROM.
Q.7. Discuss different types of viruses.

Sargodha Board (Annual Examination, 2009)

SUBJECTIVE

Note: Attempt any three questions from Section II. All question carry equal marks.

Q.2. Write a short answers of any eighteen of the following question.

i. What is system software? ii. What are pointing devices? iii. What are laser printers?
iv. What is meant by client-server model?
v. Differentiate between Defacto and Dejure standards. vi. What is router?
vii. What is meant by intranet? viii. What is synchronous transmission?
ix. What is use of CAD? x. What is meant by E-commerce?
xi. What is purpose of ALU? xii. What is guided media?
xiii. What is meant by CBT? xiv. What is SRAM? xv. What is cache memory?
xvi. What is an interrupt? xvii. What is a register? xviii. What is a compiler?
xix. What is a computer virus? xx. What is the purpose of recycle bin?
xxi. What is meant by plug and play?
xxii. What is meant by word processing? xxiii. What is page formatting?
xxiv. What is difference between save and save as?
xxv. What is spreadsheet? xxvi. What are functions in MS-Excel? xxvii. What is Internet?

Section- II (Each question carries 08 marks)

Q.3. What features distinguish one display screen from another? Explain.
Q.4. What is network? Explain different components of LAN.
Q.5.What about modem? Also describe its feature?
Q.6. What is ROM? Explain its different types.
Q.7. Discuss any five different features of Windows-2000, operating system.

AJK Board (Annual Examination, 2009)

SUBJECTIVE

Time: 02:10 Hrs **Marks: 60**

Note: Attempt any three questions from Section II. All question carry equal marks.

Q.2. Write a short answers of any eighteen of the following question.

i. What is an information technology?
ii. Define the term Video adapter.
iii. What is LASER Printer?
iv. Define information network?
v. What is Router?
vi. Enlist different components of LAN.
vii. What is meant by encoding of data?
viii. What is synchronous data transmission?
ix. Define communication satellite?
x. What is video conferencing?
xi. What is weather forecasting?
xii. What is Zero address Instruction format?
xiii. Define cache memory.
xiv. How is data transferred from processor to memory?
xv. What is an instruction set?
xvi. What is Language processor?
xvii. What is meant by software copyright?
xviii. What is Trojan horse?
xix. What is Boot sector virus?
xx. Define command line operating system.
xxi. What do you mean by plug and play feature of windows?
xxii. What are header and footers in Microsoft word?
xxiii. What is the difference betwe... "SAVE AS" option.
xxiv. Differentiate between funct...
xxv. Define cell and cell addres...
xxvi. What is Web browsing?
xxvii. What do you know abou...

Sec...

Q.3. What is software? Also...
Q.4. What is OSI model? Br...
Q.5. What is data? Explair...
Q.6. What is an instructic...
Q.7. Discuss different ty...

Time: 02:10 Hrs
Note: Attempt any...
Q.2. Write a shor...
i. What is systen...

Time: 02:10 Hrs
Note: Attempt any th...
Q.2. Write a short answ...
i. Write some applications...
ii. Differentiate between system...
iii. Discuss basic units of data...
v. What do you know about ...
vii. What is Asynchronous Tra...
ix. What is ASCII code?
xi. Define Video Conferencing?
xiii. How is data transferred from ...
xv. Define operating system.
xvi. Describe Control Unit.
xviii. What is the Password?
xix. Write the names of...
xx. Write some objects of different ...
xxi. Discuss different Mouse Events.
xxii. List our some uses of Word Processo...
xxiii. What is active cell in Excel?
xxv. List any four functions of Spreadshee...

Q.6. Explain the Fetch-Decode-Execute cycle of CPU.
Q.7. Explain different causes of computer virus.

Lahore Board (Annual Examination, 2008)

SUBJECTIVE

Time: 02:10 Hrs **Marks: 60**

Note: Attempt any three questions from Section II. All question carry equal marks.

Q.2. Write a short answers of any eighteen of the following question.

i. What is data processing? ii. What is application software? iii. What is plotter?
iv. What is meant by input devices? v. What is gateway? vi. What is an internet?
vii. What is FTP? viii. What is meant by half-duplex mode?
ix. What is meant by parallel transmission? x. What is meant by online banking?
xi. What is video conferencing? xii. What is EEPROM? xiii. What is Cache memory?.
xiv. What is meant by computer bus? xv. What is meant by serial port?
xvi. What is an object code? xvii. What is language translator or language processor?
xviii. What is meant by antivirus? xix. What is purpose of password?
xx. What do you mean by plug and play? xxi. What is meant by multi-user operating system.
xxii. What is meant by GUI? xxiii. What is meant by Word processing?
xxiv. What is header and footer? xxv. What is spreadsheet?
xxvi. What is nested function? xxvii. What is www?

Section- II (Each question carries 08 marks)

Q.3. What are source data Entry devices? List out different categories of these devices.
Q.4. What is topology? Write a note on any two of the following topology.
a. Star b. Ring c. Bus
Q.5. What do you mean by communication channel? Describe any three types in detail.
Q.6. Explain the architecture of computer system with the help of diagram.
Q.7. What is an operating system. Explain different objects of windows operating system.

Bahawalpur Board (Annual Examination, 2008)

SUBJECTIVE

Time: 02:10 Hrs **Marks: 60**

Note: Attempt any three questions from Section II. All question carry equal marks.

Q.2. Write a short answers of any eighteen of the following question.

i. Write some applications of information Technology?
ii. Differentiate between system software and Application software
iii. Discuss basic units of data storage iv. What is peer-to-peer model?
v. What do you know about bus topology? vi. What is LAN?
vii. What is Asynchronous Transmission? viii. What do you know about wireless modem?
ix. What is ASCII code? x. What is meant by computer simulation?
xi. Define Video Conferencing? xii. Why RAM is called random Access memory?
xiii. Define operating system. xiv. What is Parallel port?
xv. How is data transferred from processor to memory?
xvi. Describe Control Unit. xvii. What is backup of data?
xviii. What is Password?
xix. Write the names of different computer Viruses
xx. Write some objects of Windows Operating system.
xxi. Discuss different Mouse Events. xxii. What is print Queue?
xxiii. List out some uses of Word Processor. xxiv. Explain the use of undo and redo commands.
xxv. What is active cell in Excel?
xxvi. List any four functions of Spreadsheet. xxvii. What is Internet?

Section- II (Each question carries 08 marks)

Q.3. Describe different categories of computer software
Q.4. Define Computer Network. Discuss different Network Models?
Q.5. Define Translator. Also discuss different types of language processor.
Q.6. Explain different types of System buses.
Q.7. Write a detail note on the following:
i. Web Browsing ii. Plug and Play Technique

D.G Khan Board (Annual Examination, 2008)

SUBJECTIVE

Time: 02:10 Hrs **Marks: 60**

Note: Attempt any three questions from Section II. All question carry equal marks.

Q.2. Write a short answers of any eighteen of the following question.

i. What is meant by Information Technology?
ii. Define Customized software?
iii. What is meant by workgroup computing?
iv. Define Network Topology?
v. What is meant by Synchronous data transmission?
vi. Define Modulation?
vii. What is full duplex data transmission mode?
viii. What are the causes of virus?
ix. What do you meant by incremental backup?
x. what is meant by software copyright?
xi. What is main memory?
xii. What is a stack register?
xiii. Define source code?
xiv. Name four important functions of operating system
xv. What is an instruction set?
xvi. What do you mean by CAD?
xvii. Define e-commerce?
xviii. What is the use of My computer icon?
xix. What do you mean by plug and play feature of window?
xx. What is mail merge?
xxi. Explain the use of undo and Redo commands.
xxii. What is conditional formatting in Excel?
xxiii. What is a worksheet?
xxiv. What do you mean by ISP?
xxv. What is stylus?
xxvi. What do you mean by dedicated server?
xxvii. What is meant by uploading and downloading?

Section- II (Each question carries 08 marks)

Q.3. What is SDLC? Discuss different types of implementation of a system.
Q.4. Explain devices used to connect network of computers.
Q.5. What are CPU registers? Briefly describe special purpose registers
Q.6. What is Bus? Explain different types of system buses.
Q.7. What is email? How does it work? Describe email attachment.

Rawalpindi Board (Annual Examination, 2008)

SUBJECTIVE

Time: 02:10 Hrs **Marks: 60**

Note: Attempt any three questions from Section II. All question carry equal marks.

Q.2. Write a short answers of any eighteen of the following question.

i. Define Software and hardware.
ii. Define barcode reader.
iii. List out components of SDLC.
iv. What is client-server model?
v. What is meant by bus topology?
vi. What is WAN?
vii. What is digital signal?
viii. State two characteristics of analog signals
ix. How is data represented in computer?
x. What is E-Commcerce?
xi. What do you know about ATM?
xii. List out some activities of control unit.

xiii. What is the function of I/O unit? xiv. What is cache memory?
xv. What is port? Xvi. Write the names of popular operating systems.
xvii. How can virus damage computer? xviii. List some important antivirus programs
xix. What is password? xx. Write some characteristics of GUI operating system
xxi. What is use of windows explore? xxii. Define word processor
xxiii. What is a clipboard? xxiv. List some applications of spreadsheet?
xxv. What is the difference between worksheet and workbook?
xxvi. What is web browsing? xxvii. List four search engines.

Section- II (Each question carries 08 marks)

Q.3. What is SDLC? Discuss its different phases.
Q.4. Define Topology? Explain Bus and Ring Topology.
Q.5. What is data transmission mode? Explain its different types.
Q.6. What are data transmission modes? Explain its different types with diagram and example.
Q.7. Discuss different features of windows 2000 Operating system.

Faisalabad Board (Annual Examination, 2008)

SUBJECTIVE

Time: 02:10 Hrs **Marks: 60**

Note: Attempt any three questions from Section II. All question carry equal marks.

Q.2. Write a short answers of any eighteen of the following question.

i. What is plotter? ii. Define software.
iii. What is smart card? iv. What is computer network?
v. Write the names of different LAN Protocol?
vi. What is token? vii. What is serial data transmission?
viii. Define base band? ix. What is digital signal?
x. Define E-Commerce xi. List some important features of computer
xii. What is main memory? xiii. What is ROM?
xiv. What is computer bus? xv. What are CPU registers?
Xvi. What is compiler? xvii. List different type of virus?
xviii. What is data security? xix. What is password?
xx. What is the purpose of operating system? xxi. Define Desktop.
xxii. Define word processor xxiii. What difference is between save and save as option?
xxiv. What is spreadsheet? xxv. List some feature of spreadsheet.
xxvi. Define WWW. xxvii. List some search engines.

Section- II (Each question carries 08 marks)

Q.3. What is the input? Describe enhanced keyboard and discuss its different key functions.
Q.4. What is Topology? What difference is between bus topology and star topology?
Q.5. Briefly describes different guided media?
Q.6. Explain CPU in detail.
Q.7. What is email? Write disadvantages of email.

Multan Board (Annual Examination, 2008)

SUBJECTIVE

Time: 02:10 Hrs **Marks: 60**

Note: Attempt any three questions from Section II. All question carry equal marks.

Q.2. Write a short answers of any eighteen of the following question.

i. What do you mean by UPC? ii. What is Graphics Tablet?
iii. What do you mean by Digital Convergence? iv. Define Extranet?

v. Define TCP/IP?
vi. What do you mean by communication Forecast?
vii. List out different components of Data communication?
viii. What are two characteristics of Ana log signals?
ix. What do you mean by Asynchronous Data Transmission?
x. What is the purpose of Password?
xi. What is antivirus program?
xii. Name four different types of viruses?
xiii. Define Cache memory?
xiv. What is expansion bus?
xv. What is SRAM?
Xvi. Define Interpreter.
xvii. What is port?
xviii. What do you mean by ATM?
xix. What is a Robot?
xx. What is the use of window Explore?
xxi. List important characteristics of GUI operating system.
xxii. Define Header and footer in MS-Word.
xxiii. What is paragraph Formatting?
xxiv. What is the difference between Function and Formula?
xxv. What is a Work book?
xxvi. What is a Website?
xxvii. What do you mean by Web Surfing?

Section- II (Each question carries 08 marks)

Q.3. What are Source data Entry Devices? List out different categories of these devices. Explain any one device.
Q.4. What is Topology? What difference is between Ring topology and Bus topology?
Q.5. What is data transmission mode? Explain its different types.
Q.6. Briefly describes the Main Memory and differentiates between RAM and ROM.
Q.7. Define Operating system. Discuss different types of operating systems on the basis of user interaction.

Federal Board (Annual Examination, 2011)

SECTION- A

Time Allowed: 20 minutes **Total Marks: 15**

NOTE: Section-A is compulsory and comprises pages 1-3. All parts of this section are to be answered on the question paper itself. It should be completed in the first 20 minutes and handed over to the Centre Superintendent. Deleting/Overwriting is not allowed. Do not use lead pencil.

Q.1. Insert e Correct option i.e. A/B/C/D in the empty box provided opposite each part.

1. **Devices used for communicating the results of processing such as printer, monitor etc are known as:**
   a. CPU b. Input Devices (c) Output Devices d. Software
2. **A set of instructions or statements to be carried out by the computer's CPU to solve a particular problem is known as a/an_____.**
   a. Processor b. Computer Architecture c. ALU (d) Computer Program
3. **_____ layer of OSI Model is connected with deciding which physical pathway the data should be based on network conditions, priority or service, etc.**
   (a) Network b. Data Link c. Presentation d. Application
4. **Set of rules or agreement between different parts of a network on how data is to be transmitted is called a _____.**
   a. Network Topology (b) Communication protocol c. Hub d. None of these
5. **A_____ communication line is capable of transmitting data in only one direction:**
   a. Duplex b. Half Duplex (c) Simplex d. None of these
6. **The transmission method in which start and stop bits are not required (before transmission of each character) is called:**
   (a) Synchronous transmission b. Asychronous transmission
   c. Both A and B d. None of these

7. **A mathematical description or model of a real system in the form of a computer program is called:**
   a. Printer b. Microwave (c) Simulation d. None of these
8. **The circuitry that is used to perform operations such as addition, subtraction, etc inside a computer system is called:**
   a. Control unit b. Registers c. Cache (d) ALU
9. **The branch of law, which protects creative works from unauthorized use by other people is known as:**
   a. Criminology (b) Copyright c. Anthropology d. None of these
10. **The feature of an operating system that allows a user to work in more than one program simultaneously is called:**
    a. Process b. Clipboard c. Desktop (d) Multitasking
11. **In Microsoft windows, which shortcut is used to copy an item?**
    (a) Ctrl+C b. Ctrl+V c. Ctrl+E d. Ctrl+X
12. **Most websites and web pages on the internet are written using which language?**
    a. C++ b. COBOL c. BASIC (d) HTML
13. **Websites designed to help users search for information on the web are known as:**
    a. Chat Rooms (b) Search Engines c. Teleconference d. Browser
14. **Maintaining business relationships and selling information and commodities by means of computer telecommunication networks is known as:**
    (a) E-commerce b. Simulation c. Emulation d. CAD
15. **When the second part of an instruction code specifies the address of an operand, the instruction is said to have a/an:**
    a. Indirect address (b) Direct address
    c. Immediate operand d. None of these

SECTION- B

Time Allowed: 2:40 Hours **Total Marks: 60**

NOTE: Section-B and C comprise pages 1-2 and questions there are to be answered on the separately provided answer book. Answer any thirteen parts from Section B and attempt any three questions from Section c. Use supplementary answer sheet i.e. Sheet-B if require. Write your answers neatly and legibly.

Q.2. Attempt THIRTEEN parts. The answer to each question should not exceed 5 to 6 lines. ((13*9=39)

I. Define "information Technology". Briefly write about any two forms in which information can be represented.
II. Write a brief description of Local Area Network.
III. List and briefly describe any three operations for the Mouse may be easier to use than the keyboard.
IV. Define the following terms.
   a. Memory Cell b. Cycle Time (in terms of computer memory) c. Random Access Memory
V. Define workgroup. Write briefly about any two types of software used in workgroup computing.
VI. Briefly write the benefits of using Email.
VII. What are the basic elements of a Data Communication System?.
VIII. How can computers be useful in education?
IX. What are the benefits of using computers in weather forecasting?
X. Define ROM. List any two types of ROM used in computers.
XI. What are Computer Instruction? Briefly explain.

XII. Consider the following worksheet from MS-Excel.

	A	B	C	D	E	F	G
1	Name	Basic Pay	Conv. Allowance	Medial Allowance	Gross pay	Income Tax(5% of Basic Pay)	Net Pay(Gross Pay – Income Tax)
2	Employee A	15000	2400	1500			

Write formula in E2,F2 and G2 to calculate the Gross pay (total pay), income tax (@5% of basic pay) and Net pay, respectively.

XIII. Briefly state any three basic rules or conventions for files and folder names in MS-Windows.

XIV. A small college is considering using computers for accounts. Frequent calculation such as making totals, calculating averages, etc are involved in accounting. Which application program would you suggest the college should use to keep accounts data? What would be the benefits of using that application program?

XV. Briefly describe any three benefits of Internet.

XVI. Qasim lives at small village and is one of the few educated persons there. People frequently come to him to write applications, letters etc. Which computer program should Qasim use to write applications etc.? What would be the benefits over handwritten applications?

XVII. Consider the URL. http://www.pakistan.gov.pk Briefly explain each part of the URL.

SECTION- C

(Marks: 24)

Note: Attempt any three questions. All questions carry equal marks. (3*7=21)

Q.3. What are Network Topologies. Name and describe any three network topologies with the help of diagrams..

Q.4. Define Modulation. Name and describe any three forms/methods of modulation with the help of diagrams.

Q.5. Draw a diagram of microprocessor showing the interconnection between its various components e.g buses, registers , etc)

Q.6. What is Computer Virus? List three ways in which viruses can spread. Also mention three precautionary steps you can take to protect your computer from the threats of viruses.

Federal Board (Annual Examination, 2010)

SECTION- A

Time Allowed: 20 minutes **Total Marks: 15**

NOTE: Section-A is compulsory and comprises pages 1-3. All parts of this section are to be answered on the question paper itself. It should be completed in the first 20 minutes and handed over to the Centre Superintendent. Deleting/Overwriting is not allowed. Do not use lead pencil.

Q.1. Insert the Correct option i.e. A/B/C/D in the empty box provided opposite each part.

1. **Which of the following is used produce hardcopy of graphs, maps and engineering drawing?**
   a. Line printer b. Chain Printer (c.) Plotter d. Scanner
2. **Which of the following is a part of CPU?**
   a. RAM b. ROM c. BIOS (d.) ALU
3. **How many layers does the OSI model consist of?**
   a. 5 b. 6 (c.) 7 d. 8
4. **Which of the following is most important layer concerned with transmitting a stream of data over the physical cables?**
   (a.) Physical Layer b. Data Link Layer c. Network Layer d. Transport Layer

5. **Which of the following is called pointing devices?**
   a. Keyboard (b) Mouse c. Scanner d. Video Camera
6. **In synchronous transmission, the interval between two characters is always exactly:**
   (a) Same b. Different c. Zero d. Low
7. **Which of the following is ideal for long distance communication?**
   a. Fiber optics b. Coaxial Cable
   c. Microwave transmission (d) Satellite communications
8. **What unit is used to measure data communication speed?**
   a. Hertz b. Kbps (c) Baud d. Nibbles
9. **Which of the following devices is used to connect two computers in the same building?**
   a. Modem b. Fax Card (c) Ethernet d. Sound card
10. **Which of the following is defined as maintaining business relationships and selling information services and commodities by means of computer telecommunication network?**
    a. CAD/CAM b. Computer Simulation (c) E-Commerce d. ISO
11. **What does CIM stand for?**
    (a) Computer integrated manufacturing b. Computer International management
    c. Copy of memory d. Computer Intel marketing
12. **Which is the part of computer where actual processing takes place?**
    (a) ALU b. CU c. RAM d. Hard disk
13. **Which of the following is not a semi conductor memory?**
    a. RAM b. ROM (c) CD d. Flash disk
14. **Which register normally function as 16-bit counter that controls the sequence in which instructions are fetched from memory?**
    (a) PC b. IR c. DR d. DAR
15. **Which of the following facilities a number of people to use computer and its software at the same time, by connecting it to other PCs or workstation?**
    a. Multi-sharing (b) Multi-user operations
    c. Multi-tasking d. Network operations

SECTION- B **Time Allowed: 2:40 Hours** **Total Marks: 60**

NOTE: Section-B and C comprise pages 1-2 and questions there are to be answered on the separately provided answer book. Answer any thirteen parts from Section B and attempt any three questions from Section c. Use supplementary answer sheet i.e. Sheet-B if require. Write your answers neatly and legibly.

Q.2. Attempt THIRTEEN parts. The answer to each question should not exceed 5 to 6 lines.

I. What is TCP / IP? Explain briefly.
II. What is meant by browsing and browsers?
III. Draw a diagram of CRT and label its parts.
IV. What is meant by Access time?
V. What is data communication? Write three basic elements of data communication system.
VI. How does virus spread? Write any three ways.
VII. What are protocols? List its key elements.
VIII. Differentiate between Star Topology and Ring Topology.
IX. Write a short note on coaxial cables.
X. Flat screen monitors are becoming more popular than conventional CRT monitors. Give three reasons.
XI. Define CAD, CAM and CIM.
XII. Define GUI. List four important features of windows.
XIII. What is meant by the term virus hoax?
XIV. Why is it necessary to backup data regularly?

XV. What is copyright?
XVI. Write a short note on finding files in Windows.
XVII. Differentiate between Email address and URL.

SECTION- C

(Marks: 24)

Note: Attempt any three questions. All questions carry equal marks. (3*8=24)

Q.3. a) Write a detailed note on the disadvantages of the Internet. 04
b) Write six primary domains for US International sites 03

Q.4. a) Explain the following with reference to word processing. 4.5
i. Word Wrap ii. Header and Footers iii. Spell Check
b) Write a short note on Word Processing. 2.5

Q.5. a) Explain Recycle bin, Desktop and Taskbar. 03
b) Explain the eight data protection principles. 04

Q.6. a) Define and explain the purpose of the following register in computer systems. 04
i. Program Counter (PC) ii. Instruction Register (IR)
b) Explain three types of data communication modes. 03

Federal Board (Annual Examination, 2009)

SECTION- A

Time Allowed: 20 minutes **Total Marks: 15**

NOTE: Section-A is compulsory and comprises pages 1-3. All parts of this section are to be answered on the question paper itself. It should be completed in the first 20 minutes and handed over to the Centre Superintendent. Deleting/Overwriting is not allowed. Do not use lead pencil.

Q.1. Insert the Correct option i.e. A/B/C/D in the empty box provided opposite each part.

1. **The physical interface between CPU and peripherals is called:**
a. Bus (b) Ports c. Hardware. d. I/O switch
2. **What type of operating system MS-DOS is?**
(a) Command line interface b. Graphical user interface
c. Multi-tasking d. Menu driven interface
3. **The individual images that make up a video are called:**
(a) Frame b. Pixels c. Digits d. Bytes
4. **Which of the following text stored on clipboard?**
a. Deleted text (b) Copied text c. Repeated text d. Entered text
5. **Collection of millions of computer interlink to**
6. **one another is called:**
(a) Internet b. Intranet c. Network d. Interlink
7. **What type of printer forms images one character at a time as print head moves across the paper?**
a. Inkjet printers b. Laser printers (c) Dot matrix d. Drum printer
8. **A kilobyte is exactly:**
a. 1000 bytes b. 100 KB c. 256 bytes (d) 1024 bytes
9. **A mathematical expression that is used to perform calculation on worksheet is called:**
a. Cell b. Format (c) Formula d. Address bar
10. **A network that covers a large geographic distance such as a country is called a:**
a. Centralized network. b. Distributed network.
c. Local area network. (d) Wide area network
11. **A modem's rating of 56K refers to its:**
a. Memory size (b) Transmission speed c. Modem Size d. None.
12. **Temporary storage area within CPU is called:**
(a) Register b. RAM c. ROM d. PROM

13. **A Person who gains illegal access to computer system is known as:**
(a) Hacker b. Worm c. Software pirate d. Trojan horse
14. **The secret word or number used for protection is called:**
(a) Password b. Biometric data c. Codes d. Login
15. **Which of the following is the fastest communication mode?**
a. Half duplex (b) Full duplex c. Simple d. None
16. **Sound, light and radio waves are examples of:**
a. Digital signal (b) Analog signal c. Simple signals d. None

SECTION- B

Time Allowed: 2:40 Hours **Total Marks: 60**

NOTE: Section-B and C comprise pages 1-2 and questions there are to be answered on the separately provided answer book. Answer all the questions from Section B and attempt any three questions from Section c. Use supplementary answer sheet i.e. Sheet-B if require. Write answers neatly and legibly.

Q.2. Attempt any thirteen parts. The answer to each question should not exceed 5 to 6 lines.

i) How is hardware different from software? Give two reasons why hardware is useless without software.

ii) Define the terms. a. Read operation b. Write operation c. Access time

iii) List three application of computer in medical field.

iv) Define the basic elements required for a data communication system.

v) Define protocols. Also write the functionality of the following protocols: a. TCP / IP b. X.25

vi) Draw a diagram for star topology. List one advantage and one disadvantage of star topology.

vii) Define the terms of workgroup computing and groupware. Give one example of workgroup.

viii) List any three data protection principles.

ix) You are given a task to write an application for leave, which of the computer program you will use to write your application. How it will be advantageous over hand written application?

x) What are search engines? How they are useful in searching. Name any two search engines.

xi) How circuit switching and packet switching techniques are different in data communication?

xii) State three major function of an operating system.

xiii) Consider the following spreadsheet from MS-EXCEL.

	A	B	C	D	E	F	G
1	Name	Phy.(75)	Chem.(75)	Math(100)	Total(250)	%	Average
2	Student						

Write formula in E2, F2 and G2 to calculate total, % and average.

xiv) State three reasons for taking data backup.

xv) Write down the two reasons of using plotters over printers. Also write one drawback of plotter.

xvi) What task is carried out by the ALU?

xvii) Write down any two benefits and one drawback of internet in daily life.

SECTION- C (Marks:21)

Note: Attempt any three questions. All questions carry equal marks. (3*7=21)

Q.3. Why OSI model was developed? Draw and label OSI Model. Also write down the functionality of any four layers.

Q.4. What is the computer instruction? Elaborate direct and indirect address instructions. Also explain the three different instructions code formats diagrammatically.

Q.5. Why is it necessary to protect your computer from virus? Briefly describe five ways to protect your computer from viruses.

Q.6. How media is important in communication? Discuss any three communication media in terms of security, cost and speed.

Federal Board (Annual Examination, 2007)

SECTION- A

Time Allowed: 20 minutes **Total Marks: 15**

NOTE: Section-A is compulsory and comprises pages 1-3. All parts of this section are to be answered on the question paper itself. It should be completed in the first 20 minutes and handed over to the Centre Superintendent. Deleting/Overwriting is not allowed. Do not use lead pencil.

Q.1. Insert the Correct option i.e. A/B/C/D in the empty box provided opposite each part.

1. **What is a computer main function??**
   a. To Convert information into storage (b) To convert data into information
   c. To display date d. To create data from information
2. **What does CPU stands for:**
   (a) Central Processing Unit b. Central Product Unit
   c. Computing Program Usage d. Central Programming Unit
3. **How many keys does a standard keyboard used in personal computer have?**
   a. 110 b. 115 c. 111 (d) 102
4. **Which of the following is not a category of network?**
   a. WAN b. LAN c. MAN (d) NAN
5. **What do we call a network that covers a limited geographic distance such as an office?**
   a. Centralized b. Distributed c. Local Area d. Wide area
6. **What is topology used for a small number of computers called:**
   a. Star (b) Bus c. Mesh d. Ring
7. **Which of the following protocols were properly researched, designed and finally published as a standard?**
   a. Defacto (b) Dejure c. ISO d. CCIT
8. **Which of the following techniques uses modulation:**
   a. Bandwidth (b) Broadband c. Baseband d. None of these
9. **Which of the following communication mediums require "line-of-sight"?**
   (a) Microwave b. Fiber optic c. Twisted pair d. Coaxial Cable
10. **What does communication between a computer and keyboard involve?**
    (a) Simplex b. Half-duplex c. Full-duplex d. All
11. **Which of the following is not an example of e-commerce?**
    a. Electronic banking b. Electronic shopping
    (c) online chatting d. Online Education
12. **What is the temporary storage area within the CPU called?**
    (a) Registers b. ALU c. ROMs d. RAM
13. **What is the set of electrical paths used to transfer data called?**
    (a) Bus b. Monitors c. Computer clock d. None of these
14. **Which of the following media can be used for backup?**
    a. Floppy diskette b. Zip disk c. Tape device (d) All of these
15. **Which of the following is based on NT technology?**
    (a) Windows 2000 b. Windows 98 c. Windows 3.1 d. Windows

SECTION- B

Time Allowed: 2:40 Hours **Total Marks: 60**

NOTE: Section-B and C comprise pages 1-2 and questions there are to be answered on the separately provided answer book. Answer all the questions from Section B and attempt any three questions from Section c. Use supplementary answer sheet i.e. Sheet-B if require. Write answers neatly and legibly.

Q.2. Attempt all the questions. The answer to each question should not exceed 5 to 6 lines.

i) What is printer? Define the types of printers with one example of each. 1+1+1 OR
What is plotter? Also define different types of.plotters. 1+2

ii) Define SDLC. Also list its phases. 1+3 OR
What are different types of network models? Define the term server and client. 2+1+1

iii) List some benefits of Computer Networks. 03

iv) List different components of LAN. 03 OR
Write names of different LAN protocols. 03

v) What is data communication? List different elements of data communication. 1+2 OR
What is an analog signal? Write two of its characteristics. 1+2

vi) What is the difference between primary memory and cache memory?

vii) What do you know about CPU registers? List some general purpose registers. 2+2 OR
What are system buses? Define Data bus, address bus and control bus. 1+1+1+1

viii) What is instruction format? Also write down two parts of instruction format. 1+2

ix) Write any three functions of operating systems 03 OR
Write briefly about fetch, decode and execute instructions. 03

x) How can a virus damage a computer, write three ways? 03 OR
List different types of viruses.

xi) Define graphical user interface system. Also write three important characteristics of GUI operating system. 1+3

SECTION- C

(Marks: 24)

Note: Attempt any three questions. All questions carry equal marks. (3*8=24)

Q.3. a) Define output? What are different types of output? 1+2
b) List different types of output devices? 02
c) Differentiate between input and output giving three differences. 03

Q.4. What is bus and star topology? Explain the working of both with diagram. Also discuss their advantages and disadvantages. 2+3+3

Q.5. What is an OSI Model? List all the layers of OSI model. Explain any four layers in detail. Also draw the diagram of OSI model. 1+2+4+1

Q.6. What are CPU registers? Describe special-purpose registers in detail. 3+5 OR
What is the purpose of Data Protection Act? Write down the eight data protection principles.