

UNIT 17

INFORMATION AND COMMUNICATION TECHNOLOGY

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17.1 INFORMATION AND COMMUNICATION TECHNOLOGY

17.2 CBIS

LONG QUESTIONS

Q.1 What are the components of information technology? Clearly indicate the function of each component. (K.B+U.B+A.B) (Review Question 17.3)

OR Explain CBIS?

Ans:

CBIS

Introduction:

CBIS stands for Computer Base Information System. Every system being used for processing and transferring data in which computers are involved is called Computer Based Information System.

Components of CBIS:

There are five parts that must come together in order to produce a Computer-Based Information System (CBIS).

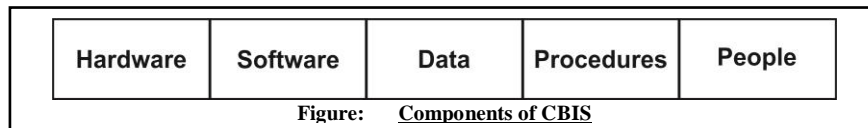


Figure: Components of CBIS

Hardware:

The term hardware refers to machinery. This includes the central processing unit (CPU), and all of its support equipment. Among the support equipment are input and output devices, storage devices and communication devices.

Software:

The term software refers to computer programs and the manuals that support them. Computer programs are machine-readable instructions that direct the circuitry within the hardware parts of the CBIS to produce useful information from data. Programs are generally stored on some input output medium, often a disk or tape.

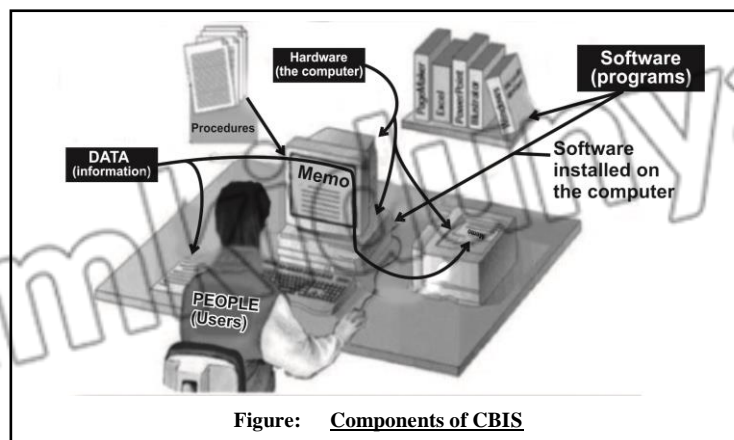


Figure: Components of CBIS

Data:

Data are facts and figures that are used by programs to produce useful information. It may be in the form of text, graphic or figure that can be recorded and that have specific meaning. Like programs, data are generally stored in machine-readable form on disk or tape until the computer needs them.

Procedures:

These are set of instructions and rules to design and use information system. These are written in manuals and documents for use. These rules or methods may change from time to time. The Information System must be flexible to incorporate these changes.

People (User):

Every CBIS needs people if it is to be useful, who influence the success or failure of information systems. People design and operate the software, they feed input data, build the hardware for the smooth running of any CBIS. People write the procedures and it is ultimately people who determine the success or failure of a CBIS.

17.1, 17.2 SHORT QUESTIONS

Q.1 Write some sources of communications being used now-a- days. (A.B)

Ans:

SOURCES OF COMMUNICATIONS

We are living in the age of information and communication technology. It is not long ago when the telephone was the only device of communication within the country or abroad. Now-a-days, in addition to telephone, mobile phone, fax machine, computer and internet are the main sources of contact. These sources have shortened the distances and have brought in contact the whole world.

Q.2 Differentiate data and information. (K.B)

(LHR 2017)

OR What is difference between data and information?

(Review Question 17.1)

Ans:

DIFFERENTIATION

Data and Information can be differentiated as:

Data	Information
Definition	
<ul style="list-style-type: none"> Data are facts and figures that are used by programs to produce useful information. It may be in the form of text, graphic or figure that can be recorded and that have specific meaning. 	<ul style="list-style-type: none"> In computer technology, processed data is called information. Computer processes the data and converts it into useful information. This information is transmitted to distant places in the form of sound, picture and computerized data.
Input/output	
<ul style="list-style-type: none"> Data is always an input for a computer system. 	<ul style="list-style-type: none"> Information is output of data.
Meanings	
<ul style="list-style-type: none"> Data does not carry a meaning. 	<ul style="list-style-type: none"> Information must carry a logical meaning.
Format	
<ul style="list-style-type: none"> Data is always in machine readable form. 	<ul style="list-style-type: none"> Information is always user's readable form.
Example	
<ul style="list-style-type: none"> 1,2,+,=3 values are data 	<ul style="list-style-type: none"> 1+2=3 is an information

Q.3 What do you understand by information and communication technology (ICT)?
(K.B)

(LHR 2015)(Review Question 17.2)

Ans: ICT

Definition:

“Information and Communication Technology (ICT) is defined as the scientific methods and means to store, process and transmit vast amounts of information in seconds with the help of electronic equipment”.

Explanation:

Information and Communication Technology (ICT) is basically an electronic based system of information transmission, reception, processing and retrieval. ICT is a blend of two fields: information technology and telecommunication. The two terms are defined as follows:

- The scientific method used to store information, to arrange it for proper use and to communicate it to others is called information technology.
- The method that is used to communicate information to far off places instantly is called telecommunication.

Q.4 Define the terms. (K.B)

(LHR 2014, 2015, 2017, GRW 2017)

(i) Information technology

(ii) Telecommunication

Ans: INFORMATION TECHNOLOGY

Definition:

“The scientific method used to store information, to arrange it for proper use and to communicate it to others is called information technology”.

TELECOMMUNICATION

Definition:

“The method that is used to communicate information to far off places instantly is called telecommunication”.

Q.5 Differentiate between hardware and software. (K.B)

(GRW 2014, 2015, 2017)

OR What is the difference between hardware and software? Name different software.

(Review Question 17.9)

Ans: DIFFERENTIATION

Hardware and software can be differentiated as:

Hardware	Software
Definition	
<ul style="list-style-type: none"> • The term hardware refers to machinery that can be physically touched. 	<ul style="list-style-type: none"> • The term software refers to computer programs and the manuals that support them.
Nature	
<ul style="list-style-type: none"> • Hardware is physical in nature. 	<ul style="list-style-type: none"> • Software is logical in nature.
Durability	
<ul style="list-style-type: none"> • Hardware wears out over time 	<ul style="list-style-type: none"> • Software does not wear out over time. However, bugs are discovered in software as time passes.
Types	

<ul style="list-style-type: none"> • Input, storage, processing, control, and output devices are different types of hardware 	<ul style="list-style-type: none"> • System software, Programming software, and application software are different types of software
Examples	
<ul style="list-style-type: none"> • CPU • Keyboard • Monitor • Mouse 	<ul style="list-style-type: none"> • Word processing program • Power point • Operating system

Q.6 Define computer programs. (K.B)

Ans:

COMPUTER PROGRAMS

Definition:

Computer programs are machine-readable instructions that direct the circuitry within the hardware parts of the CBIS to produce useful information from data. Programs are generally stored on some input output medium, often a disk or tape.

Q.7 What are the uses of modern electromagnetic radiation?(K.B) (For your information Pg. # 156)

Ans:

USES OF MODERN TELECOMMUNICATION

All modern telecommunications use some form of electromagnetic radiation. Radiowaves carry information to local radio and T.V. Microwaves are used for mobile phones, radar and transmission to satellite in space.

17.1, 17.2 MULTIPLE CHOICE QUESTIONS

- The computer-based information system (CBIS) is formed by components: (K.B)**
 (A) 2 (B) 3
 (C) 4 (D) 5
- Which is the most suitable means of reliable continuous communication between the orbiting satellites and earth: (K.B) (For your information Pg. # 156)**
 (A) Micro waves (B) Radiowaves
 (C) Sound waves (D) Light waves
- In computer terminology the term machinery refers to: (K.B)**
 (A) Software (B) Hardware
 (C) Data (D) Procedures
- Set of instructions and rules are called: (K.B)**
 (A) Software (B) Hardware
 (C) Data (D) Procedures
- Who determines the success and failure of CBIS? (K.B)**
 (A) Data (B) Information
 (C) Procedures (D) People
- Microwaves are used for: (A.B) (For your information Pg. # 156)**
 (A) Mobile phones (B) Radar
 (C) Satellites (D) All of these
- Which source has shortened the distances and has brought in contact the whole world? (K.B)**
 (A) Telephone (B) Mobile phone
 (C) Fax machine (D) All of these

8. Which is basically an electronic based system of information transmission reception, processing and retrieval? (K.B)
 (A) ICT (B) IDT or OR
 (C) CRO (D) ADC or DAC
9. The method used to communicate information to far off places instantly is called: (A.B)
 (A) Telecommunication (B) Information
 (C) Transfer of data (D) Production
10. Who design and operate the software and feed input data, build the hardware for the smooth running of any CBIS? (K.B)
 (A) Software (B) Hardware
 (C) People (D) Data

17.3**FLOW OF INFORMATION****17.4 TRANSMISSION OF ELECTRICAL SIGNAL THROUGH WIRES****LONG QUESTIONS**

Q.1 What is flow of information? Write its elements. (K.B+U.B+A.B)

Ans:

FLOW OF INFORMATION**Definition:**

“Flow of information means the transfer of information from one place to another through different electronic and optical equipment”.

Means of Communication System:

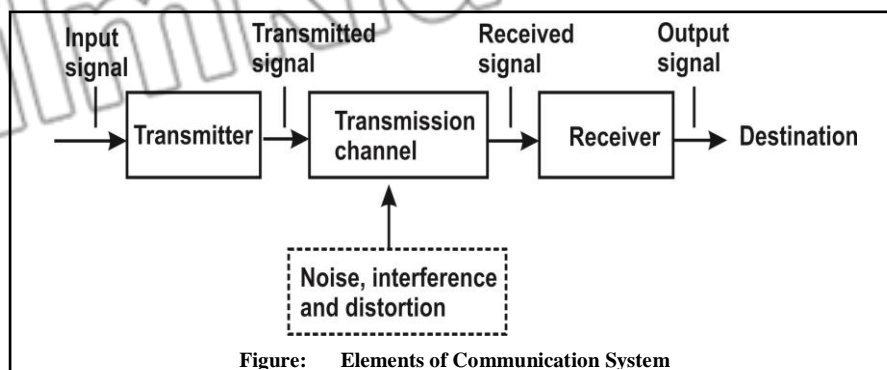
Following are important means of communication system:

- In telephone, information is sent through wires in the form of electrical signals.
- In radio, television and cell phone information is sent either through space in the form of electromagnetic waves, or through optical fibres in the form of light.
- Radiowaves are continuously refracted by different layers in the Earth's atmosphere. This leads to weaken the signal, making it difficult to be received over long distances. Unlike radiowaves, microwaves are not refracted. Microwaves are used for satellite communications.

Elements of Communication System:

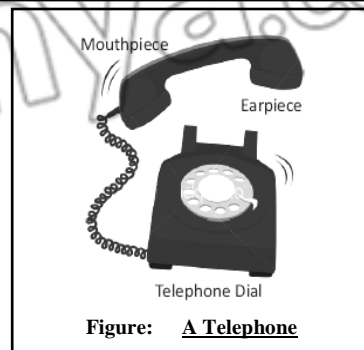
There are three essential parts of any communication system:

- Transmitter
- Transmission channel
- Receiver



Explanation:

The transmitter processes the input signal. The transmission channel is the medium which sends the signal from source to destination. It may be a pair of wires, a coaxial cable, a radio wave or optical fibre cable. So, the signal power progressively decreases with increasing distance. The receiver takes the output signal from the transmission channel and delivers it to the transducer after processing it. The receiver may amplify the input signal to compensate for transmission loss.

Figure: A Telephone

Q.2 Explain transmission of electrical signals through wires. (K.B+U.B+A.B)

Ans:

TRANSMISSION THROUGH WIRES**Introduction:**

Alexander Graham Bell in 1876 made a simple telephone model to send voice in the form of electrical signal from one place to another.

Construction of Telephone:

It consists of a metal reed, an electric coil, and a vibrating diaphragm. Modern telephone also uses diaphragms to turn voices into electrical signal that are transmitted over phone lines. Telephone system has two parts:

- Mouthpiece
- Earpiece

Working:

There are two steps for the working of this system:

- The mouthpiece and receiver contain carbon granules and a thin metal diaphragm. When we speak into the mouthpiece, the sound vibrations also vibrate the diaphragm. A slight vibration of the diaphragm compresses the carbon and thus an electrical current can flow through the wire.
- This process is reversed at the other end of the line by the receiver. The electrical current flowing through an electromagnet in the receiver produces a varying magnetic field. This magnetic field attracts the thin metal diaphragm in the receiver, causing it to vibrate. This vibration of the diaphragm produces sound waves.

17.3, 17.4 SHORT QUESTIONS

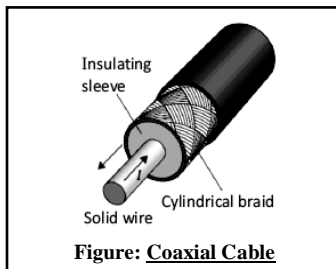
Q.1 Define coaxial cable. (K.B+A.B)

(For your information Pg. # 158)

Ans:

COAXIAL CABLE**Definition:**

“Coaxial cable wires are used to transmit electric signals such as cable TV to your home. To prevent electric and magnetic interference from outside, a covering of conducting material surrounds the coaxial wires”.

Figure: Coaxial Cable

Q.2 Define flow of information. (K.B)

Ans: **FLOW OF INFORMATION**

Definition:

“Flow of information means the transfer of information from one place to another through different electronic and optical equipment”.

Means of Communication System:

Following are important means of communication system:

- In telephone, information is sent through wires in the form of electrical signals.
- In radio, television and cell phone information is sent either through space in the form of electromagnetic waves, or through optical fibres in the form of light.

Q.3 Why satellite communication system is based on microwaves instead of radiowaves? (K.B)

Ans: **SATELLITE COMMUNICATION**

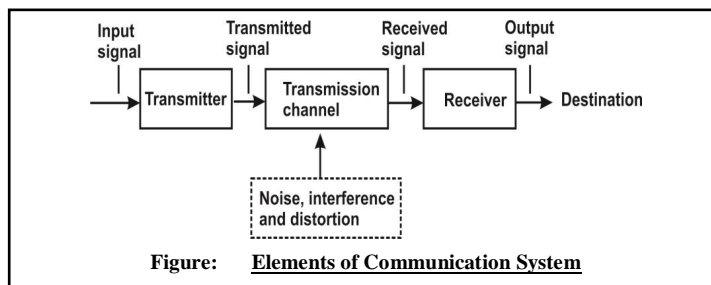
Radiowaves are continuously refracted by different layers in the Earth’s atmosphere. This leads to weaken the signal, making it difficult to be received over long distances. Unlike Radiowaves, microwaves are not refracted that is why microwaves are used for satellite communications.

Q.4 Write essential parts of communication system. (K.B+U.B)

Ans: **COMMUNICATION SYSTEM**

There are three essential parts of any communication system:

- Transmitter
- Transmission channel
- Receiver



Q.5 Define transmission channel. (K.B)

Ans: **TRANSMISSION CHANNEL**

Definition:

The transmission channel is the medium which send the signal from source to destination. It may be a pair of wires, a coaxial cable, a radiowaves or optical fibre cable.

17.3, 17.4 MULTIPLE CHOICE QUESTIONS

- How many essential parts are there in any communication system? (K.B)**
 (A) 2 (B) 3
 (C) 4 (D) 5
- Noise, interference and distortion can occur in: (K.B)**
 (A) Transmitter (B) Receiver
 (C) Transmission channel (D) None
- Telephone was first invented in: (K.B)**
 (A) 1676 (B) 1876
 (C) 1776 (D) 1976

4. Telephone was first invented by: (K.B)

(A) Marconi	(B) Newton
(C) Graham Bell	(D) Edison
5. In telephone the mouth piece and receiver contain: (K.B)

(A) Carbon granules	(B) Metal diaphragm
(C) Antenna	(D) Both (A) & (B)
6. The transfer of information from one place to another through different electronic and optical equipment is: (K.B)

(A) Flow of information	(B) Information storage
(C) Information collection	(D) Cheque information
7. In telephone, information is sent in form of signals through: (K.B)

(A) Wires	(B) Plastic
(C) Spring	(D) Threads
8. The essential part of any communication system is: (K.B)

(A) Transmitter	(B) Transmission channel
(C) Receiver	(D) All given
9. Alexander Graham Bell in 1876 made a: (K.B)

(A) Machine	(B) Computer
(C) Telephone	(D) Cell
10. Telephones send voice in form of: (K.B)

(A) Waves	(B) Electrical signals
(C) Mechanical signals	(D) Magnetic signals

17.5 TRANSMISSION OF RADIOWAVES THROUGH SPACE

17.6 TRANSMISSION OF LIGHT SIGNALS THROUGH OPTICAL FIBRES

LONG QUESTIONS

Q.1 Explain the transmission of radiowaves through space. (K.B+U.B+A.B)

(LHR 2016)(Review Question 17.6)

Ans:

TRANSMISSION OF RADIOWAVES

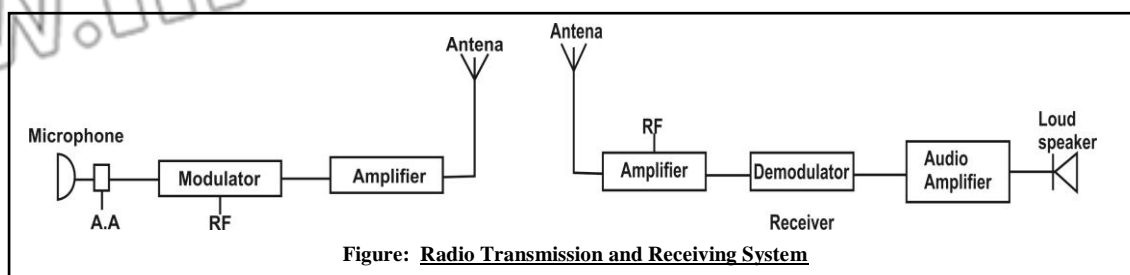
Introduction:

Electrical signals representing information from a microphone, a TV camera, or a computer can be sent from one place to another place using either cables or radiowaves. Information in the form of audio frequency (AF) signals may be transmitted directly by cable. However, in order to send information over a long distance it has to be superimposed on electromagnetic waves.

Components Used for Transmission:

There are two main components used for transmission of radiowaves through space

- Transmitter
- Receiver



Working:

There are two steps for the working of this system:

- Sound waves produced at the radio station are changed into electrical signals through microphone. These electric signals are then fed into the transmission antenna which consists of two metal rods. Signals falling on the transmission antenna oscillate the charges which then emit these electrical signals in the form of electromagnetic radiowaves.
- At the receiving end, the receiver selects and amplifies the modulated signal. The demodulator then extracts the information signal and delivers it to the receptor.

Q.2 What is Cell Phone Technology? Write its working. (K.B+U.B+A.B)

Ans:

CELL PHONE**Introduction:**

Radio technology is applied in mobile phone. It is a type of radio having two-way communications. A cell phone carries a radio transmitter and a receiver inside it. It sends and receives the message in the form of radiowaves.

Construction:

Cell phone network system consists of:

- Cells
- Base Stations (BSs)
- Mobile Switching Centre (MSC)

Cell:

A base station is a wireless communications station set up at a particular geographical location. The geographical area covered by a single base station is known as a cell.

Cluster:

The group of cells forms a cluster. All BSs within a cluster are connected to a MSC using land lines. The MSC stores information about the subscribers located within the cluster and is responsible for directing calls to them.

Working:

When a caller calls another cell phone, sound waves of the caller are converted into radiowaves signal. This radio signal of particular frequency is sent to the local base station of the caller where the signal is assigned a specific radio frequency. This signal is then sent to the base station of the receiver through MSC. Then the call is transferred to the cell phone of the receiver. Mobile receiver again changes the radiowaves into sound.

Q.3 What is an optical fibre? Write its construction and working. (K.B+U.B+A.B)

OR Describe the transmission of light signals through optical fibres.

OR How are light signals sent through optical fibre? (GRW 2016)(Review Question 17.7)

Ans:

OPTICAL FIBRE**Introduction:**

Waves of visible light have a much higher frequency than that of radiowaves. This means, rate of sending information with light beams is larger than that with radiowaves or microwaves. An optical fibre has been used as transmission channel for this purpose.

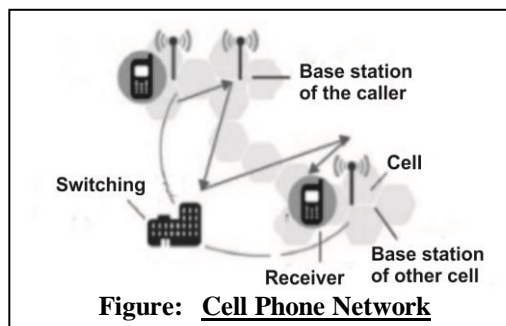


Figure: Cell Phone Network

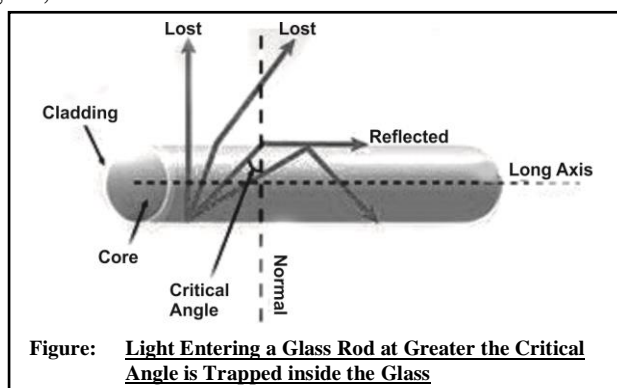


Construction:

An optical fibre with a coating of lower refractive index is a thin strand of high-quality glass that absorbs very little light. An optical fibre cable is a bundle of glass fibres with thickness of a human hair.

Working:

Light that enters the core at one end of the optical fibre goes straight and hits the inner wall (the cladding) of fibre optics. If the angle of incidence with cladding is less than the critical angle, some of the light will escape the fibre optics and will be lost. However, if the angle of incidence is greater than the critical angle, light is totally reflected into the fibre optics. Then the totally reflected beam of light travels in a straight line until it hits the inner wall again, and so on.

**Advantages:**

The advantage of optical fibre is that it can be used for sending very high data rates over long distances. This feature of fibre optics distinguishes it from wires. When electrical signals are transmitted through wires, the signal lost increases with increasing data rate. This decreases the range of the signal.

Multi-Mode Cables:

Each optical fibre in a multi-mode cable is about 10 times thicker than fibre optics used in a single-mode cable. This means light beams can travel through the core by following different paths, hence the name multiple-mode. Multi-mode cables can send information only over relatively short distances and are used to link computer networks together.

Conclusion:

Most of the data transmitted across the internet is also carried by light. A network of fibre-optic cables across the country carrying data from one computer to another.

Q.4 What is computer? What is the role of computer in every day of life?

(K.B+U.B+A.B)

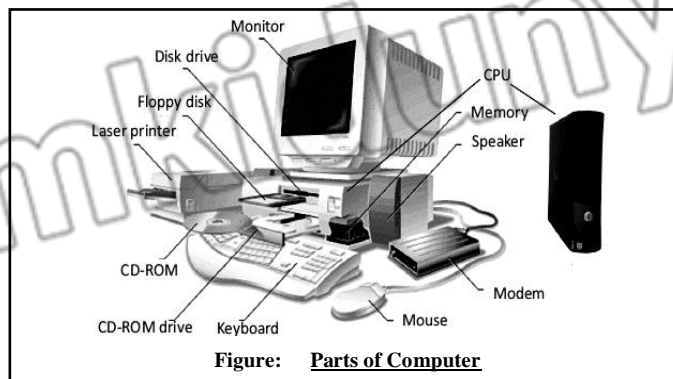
(LHR 2017)(Review Question 17.8)

Ans:

COMPUTER

Introduction:

Computer is an electronic computing machine used for adding, subtracting or multiplying and to perform various logic operations. Computer can be programmed to accept data process it and to convert it into Information and to store it for further use.

**Working:**

Computers work through an interaction of hardware and software.

Hardware:

Hardware refers to the parts of a computer that you can see and touch. These include CPU, monitor, keyboard, mouse, printer etc.

CPU:

The most important piece of hardware is the Central Processing Unit (CPU) that contains a tiny rectangular chip called microprocessor. It is the “brain” of computer—the part that translates instructions and performs calculations.

Software:

Software refers to the instructions, or programs, that tell the hardware what to do. A word processing program that we can use to write letters on our computer is a type of software.

The Operating System:

The operating system (OS) is software that manages our computer and the devices connected to it.

Example:

- Windows
- Linux operating system

Role of Computers:

(LHR 2014)

Computer plays an important role in our daily life.

- In offices, computers are used for preparing letters, documents and reports.
- In hotels, computers are used for advance booking of rooms, preparing bills and providing enquiry services.
- In railways, computers are used for rail reservation, printing of tickets and preparation of reservation charts.
- Doctors use computers for diagnosing illness and treatment of diseases.
- Architects use them for building designing and city planning. In meteorology department, computers are used for weather forecasting.

Conclusion:

Now usual desktop computers have been replaced by laptops to a great extent. Laptops are more compact and hence are portable. The most powerful and swift computer which can send an information in one thousand billionth part of a second is called super computer. It contains many processors. They have increased our speed, accuracy and efficiency.

17.5, 17.6 SHORT QUESTIONS

Q.1 Who transmitted first radio signal in space? (K.B) (Do you know Pg. # 159)

Ans: FIRST RADIO SIGNAL

Radiowaves are electromagnetic waves and they travel with the speed of light. Marconi has the distinction that he transmitted the first radio signal through the air.

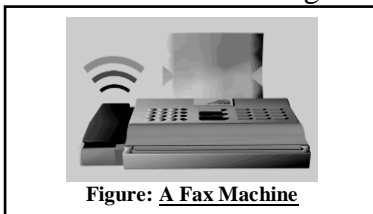


Figure: A Fax Machine

Q.2 Why are sound waves converted into electromagnetic waves? (K.B)

(Interesting Information Pg. # 159)

Ans: CONVERSION OF SOUND WAVES

The speed of sound in air is just 1246 km per hour and it cannot go far away from its source. Therefore, it is converted into electromagnetic wave so that they can be sent to far off areas with the speed of light.

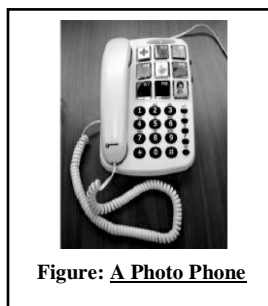


Figure: A Photo Phone

Q.3 Write working of radio tuning circuit. (K.B+U.B)

(For your Information Pg. # 160)

Ans: RADIO TUNING CIRCUIT

Radio tuning circuit consists of coils of fine wire wound on a rod which is connected to the antenna. The coils are connected to variable capacitors. The tuned circuit selects signals of only particular frequency. It does not amplify the signals from transmitters with slightly lower or higher frequencies. The voltage rises and falls as the frequency of the received signal increases or decreases relative to the constant frequency of the oscillator.

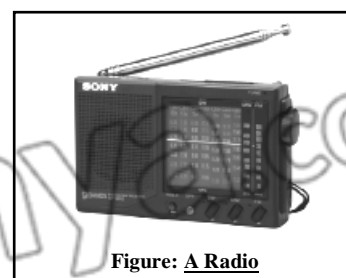


Figure: A Radio

Q.4 What is a fax machine? Write its working. (K.B+U.B)

(GRW 2014,

LHR 2015)

Ans: FAX MACHINE

Introduction:

Fax machine is also known as 'Telefacsimile's'. Fax machine is used to send the copy of documents from one place to another place.

Working:

A fax machine basically scans a page to convert its text and graphic into electronics signals and transmits it to another fax machine through telephone line. The receiving machine converts the signal and uses a printer (usually built in) to create the copy of the message that was sent.

Q.5 What is photo phone? (K.B) (LHR 2014, GRW 2014)

Ans: PHOTO PHONE

Modern version of photo phone or video phone is contrary to a common telephone, users can see the pictures of each other. By using the photo and phone numbers of our friends or family members on this telephone, we can call them by pressing the pad with their photos. Thus, we can communicate with our relatives or friends on photo phone with the physical appearance of each other. A mobile phone sends text messages and takes and transmits images. The new 3G and 4G technologies have made video phones common place.

Q.6 What do you know about microwaves? (K.B) (For your information Pg. # 162)

Ans: MICROWAVES

Microwaves are modern means of communication. Microwave, digital and optical fibre technologies are combined to give us today's telecommunications systems. Microwaves travel in straight lines through the space and give a very strong signal. We can connect to the other side of the world in milliseconds.

Uses:

Micro waves are used for mobile phones, radar and transmission to satellites in space.

Q.7 What do you know about INTELSAT and SATCOM?

(K.B) (For your information Pg. # 162)

Ans: INTELSAT AND SATCOM

INTELSAT and SATCOM are communication satellites. They are geostationary satellites that stay over the same position above the Earth surface and receive and transmit digital signals across the world.

Q.8 What are super computers? (K.B) (Interesting Information Pg. # 164)

Ans: SUPER COMPUTERS

The most powerful and swift computer which can send an information in one thousand billionth part of a second is called super computer. It contains many processors.

Q.9 Define bit and byte. (K.B) (For your Information Pg. # 164)

Ans: BIT AND BYTE

Definition:

Computers use data in binary form i.e. in the form of 0's and 1's. A bit is a single numeric value, either '1' or '0', that encodes a single unit of digital information. A byte is equal to eight bits. Larger units of digital data are kilobytes (kB), megabyte (MB) and gigabyte (GB). These are defined as below:

$$1 \text{ Kb} = 1024 \text{ bytes}$$

$$1 \text{ MB} = 1024 \text{ kilobytes}$$

$$1 \text{ GB} = 1024 \text{ megabytes}$$

Q.10 What is operating system? (K.B) (LHR 2016)

Ans: OPERATING SYSTEM

Definition:

The operating system (OS) is software that manages our computer and the devices connected to it.

Example:

- Windows
- Linux operating system

17.5, 17.6 MULTIPLE CHOICE QUESTIONS

1. **The speed of sound in air is: (K.B)** (LHR 2014, GRW 2014)
(A) 1246 kmh^{-1} (B) 346 ms^{-1}
(C) $300000000 \text{ ms}^{-1}$ (D) Both (A) & (B)
2. **Radiowaves are: (K.B)**
(A) Electromagnetic (B) Mechanical
(C) Magnetic (D) Microwaves
3. **The speed of radiowaves is equal to: (K.B)**
(A) Speed of sound (B) Speed of light
(C) Speed of air (D) Speed of electrical signals
4. **RF Modulator stands for: (K.B)**
(A) Radio Force Modulator (B) Removal of Force Modulator
(C) Radio Frequency Modulator (D) Random Frequency Modulator
5. **Wireless communication station set up at a particular geographical location is called: (K.B)**
(A) Cell (B) Cluster
(C) Base station (D) MSC
6. **The technology used in cell phone or Mobile phone is: (K.B)**
(A) Computer (B) Radar
(C) Radio (D) Satellite
7. **Information in the form of audio frequency (AF) signals may be transmitted directly by: (K.B)**
(A) Wire (B) Computer
(C) Cable (D) TV
8. **For sending information over a long distance it has to be superimposed on: (K.B)**
(A) Mechanical waves (B) Electromagnetic waves
(C) Sound waves (D) Kinetic waves
9. **At the radio station, sound waves produced are changed into electrical signals through: (K.B)**
(A) Microphone (B) Modem
(C) Speaker (D) Head phone
10. **Which device basically scans a page to convert its text and graphic into electronics signal and transmit it? (K.B)**
(A) Cell phone (B) Photophone
(C) Fax machine (D) Text machine
11. **Cell phone is a type of _____ having two way communications. (K.B)**
(A) T.V (B) Computer
(C) Radio (D) Microwave oven
12. **Cell phone sends and receives the message in the form of : (K.B)**
(A) Electronic wave (B) Radiowaves
(C) Mechanical waves (D) Magnetic waves
13. **Cell phone network system consists of: (K.B)**
(A) Base stations (B) Mobile switching center
(C) Cells (D) All given
14. **Carries more than enough data to support television, telephone and computer data: (K.B)**
(A) Single copper wire (B) Single fibreoptic cable
(C) Single coaxial cable (D) PTCL line

15. **1kB =?(U.B)** (LHR 2015)
(A) 1000 bytes (B) 1024 bytes
(C) 100 bytes (D) 1024 kilobytes
16. **1MB =?(K.B)** (LHR 2014, 2016, 2017, GRW 2016)
(A) 1000 bytes (B) 1024 bytes
(C) 100 bytes (D) 1024 kilobytes
17. **1GB =?(K.B)**
(A) 1000 bytes (B) 1024 megabytes
(C) 100 bytes (D) 1024 kilobytes
18. **One Byte is to: (K.B)** (GRW 2015)
(A) 2 bits (B) 4 bits
(C) 6 bits (D) 8 bits
19. **The most powerful and swift computer is: (K.B)**
(A) Mainframe (B) Desktop
(C) Supercomputer (D) P4
20. **Which refers to computer programs and the manuals that support them? (K.B)**
(A) Software (B) Hardware
(C) Data (D) Information
21. **Which are facts that are used by programs produce useful information? (A.B)**
(A) Data (B) Software
(C) Hardware (D) Programs
22. **Which is an electronic computing machine used for adding, subtracting and multiplying? (A.B)**
(A) Mobile (B) Compute
(C) Cell phone (D) Photophone
23. **The most important piece of hardware is: (K.B)**
(A) Monitor (B) Keyboard
(C) Printer (D) CPU
24. **Microprocessor is tiny rectangular chip present in: (A.B)**
(A) CPU (B) Monitor
(C) Printer (D) Keyboard
25. **Which refers to the instructions or programs? (K.B)**
(A) Hardware (B) Software
(C) Monitor (D) Keyboard
26. **Which are more compact and portable? (K.B)**
(A) Desktop (B) Computers
(C) Laptops (D) All of these

17.7 INFORMATION STORAGE DEVICES**LONG QUESTIONS**

Q.1 What are information storage devices? Write their types. (K.B+A.B+U.B)

Ans: INFORMATION STORAGE DEVICES

Introduction:

A storage device is a device designed to store information in computer. Storage devices work on different principles using electronics, magnetism and laser technology.

Types:

In computer technology there are two types of storage devices.

- Primary storage devices
- Secondary storage devices

Primary Storage Devices:

Primary storage devices constitute primary memory

Primary Memory:

It is based on electronics and consists of integrated circuits (ICs). It consists of two parts;

- Read only memory (ROM), which starts the computer.
- Random access memory (RAM), which is used by computer as temporary memory. RAM vanishes when the computer is switched off.

Secondary Storage Devices:

The data storage devices are generally the secondary memory of the computer. It is used to store the data permanently in the computer. When we open a program, data is moved from the secondary storage into the primary storage.

Examples:

- Audio-video cassettes
- Hard disk

Q.2 Name different information storage devices and write a note on audio and video cassettes and magnetic disk. (K.B+U.B+A.B)

Or Name different informations storage devices and describe their uses. (Review Question 17.5)

Ans: INFORMATION STORAGE DEVICES

The devices which are used to store any important data or information are called information storing devices.

Examples:

- Audio video cassettes
- Magnetic disks
- Hard disks
- Compact disk
- Flash drive

The storage devices work on different principles using electronics, magnetism and laser technology.

AUDIO AND VIDEO CASSETTES

These devices are based on magnetism. Audio cassettes consist of a tape of magnetic material on which sound is recorded in a particular pattern of a magnetic field.

Working:

Recording of sound on audiotape involves following steps:

- Microphone changes sound waves into electric pulses, which are amplified by an amplifier.
- Magnetic tape is moved across the head of audio cassette recorder which is in fact an electromagnet.
- Thus magnetic tape is magnetized in a particular pattern according to rise and fall of current. In this way, sound is stored in a specific magnetic pattern on this tape.

To produce the sound again following procedure is followed:

- The tape is moved past the play back head.
- Changes in the magnetic field on the tape induce alternating current signals in the coil wound on the head.
- These signals are amplified and sent to the loudspeakers which reproduce the recorded sound.

In video tape/cassettes, pictures are recorded along with sound.

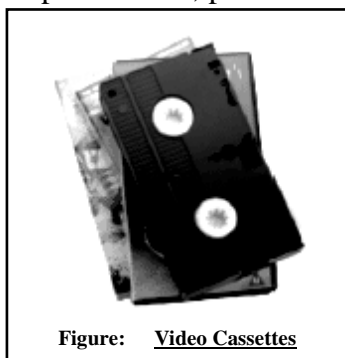


Figure: Video Cassettes

MAGNETIC DISKS

There are different types of magnetic disks coated with a layer of some magnetic material. The read/write head of disks are similar to the record replay head on a tape recorder. It magnetizes parts of the surface to record information. The difference is that a disk is a digital medium—binary numbers are written and read.

Floppy Disk:

A floppy disc is a small magnetically sensitive, flexible plastic wafer housed in a plastic case. It is coated with a magnetic oxide similar to the material used to coat cassettes and video tapes. Most personal computers include at least one disk drive that allows the computer to write it and read from floppy disk.

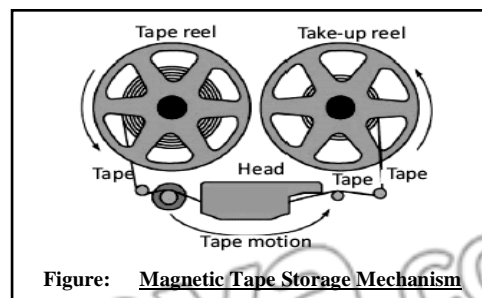


Figure: Magnetic Tape Storage Mechanism

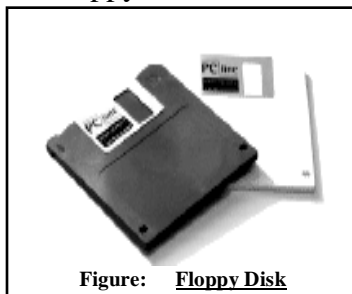


Figure: Floppy Disk

Advantages of Floppy Disks:

Following are advantages of Floppy disks:

- Floppies are inexpensive
- Convenient to use
- Floppies are reliable

Disadvantages of Floppy Disks:

Following are disadvantages of Floppy disks:

- They lack the storage capacity and drive speed for many large jobs.
- Data stored on floppy disks is also subject to loss as a result of stray magnetic fields.
- As far as floppy disks are concerned, they are reliable only for short-term storage and cannot be used longer and no attempts should be made to save the data for a longer period.
- As the magnetic fields weaken the data will also be lost.

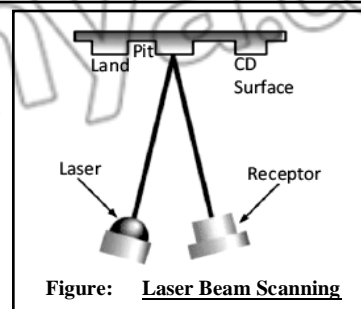


Figure: Laser Beam Scanning

Q.3 Write a note on compact disk and flash drive.

(K.B+U.B+A.B)

Ans:

COMPACT DISK (CDs)

This is based on laser technology. It is a molded plastic disc on which digital data is stored in the form of microscopic reflecting and non-reflecting spots which are called “pits” and “lands” respectively.

- Pits are the spiral tracks encoded on the top surface of CD
- Lands are the areas between pits

Working:

A fine laser beam scans the surface of the rotating disk to read the data. Pits and lands reflect different amount of the laser light falling on the surface of CD. This pattern of different amount of the light reflected by the pits and the lands is converted into binary data.

- The presence of pit indicates ‘1’
- Absence of pit indicates ‘0’.

Storage Capacity:

A CD can store over 680 megabyte of computer data. A DVD, the same size as traditional CD, is able to store up to 17 gigabytes of data.

FLASH DRIVE

(LHR 2016)

It is also an electronic based device and consists of data storage ICs.

- A flash drive is a small storage device that can be used to transport files from one computer to another.
- They are slightly larger than a stick of gum, yet many of these devices can carry all of our homework for an entire year.
- We can keep one on a key chain, carry it around our neck, or attach it to our book bag.

Advantages:

A flash drive has following advantages:

- It is easy to carry data from one place to another place.

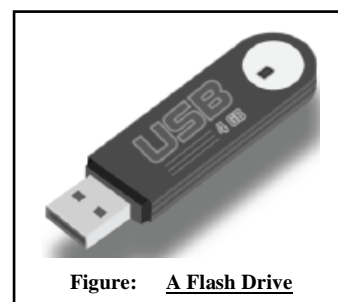


Figure: A Flash Drive

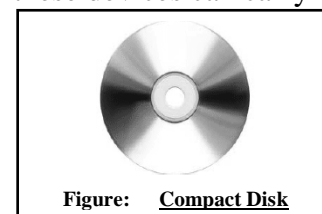


Figure: Compact Disk

- A flash drive is easy to use. Once we have created a paper or other work, we can simply plug our flash drive into a USB port.
- We can make a backup of our created paper or project on our flash drive and we can save it separate from our computer.
- A flash drive will also enables us to print out homework at school. We can write a paper at home, save it to our flash drive, and then we can plug the drive into a USB port on a school computer for taking prints.

Q.4 Differentiate between primary memory and secondary memory. (K.B)
(Review Question 17.4)

Ans:

DIFFERENTIATION

Primary and Secondary memory can be differentiated as

Primary Memory	Secondary Memory
Type	
<ul style="list-style-type: none"> • Primary memory is also known as main memory or internal memory 	<ul style="list-style-type: none"> • Secondary memory is also known as external memory or auxiliary memory
Access of Data	
<ul style="list-style-type: none"> • In primary memory, data is directly accessed by the processing unit. 	<ul style="list-style-type: none"> • In secondary memory, data is first transferred to main memory and then routed to processing unit.
Storage Devices	
<ul style="list-style-type: none"> • Semi-conductor chips are used to store information in primary memory. 	<ul style="list-style-type: none"> • Magnetic disk, optical disks are used to store information in secondary memory.
Durability	
<ul style="list-style-type: none"> • Information stored is temporary and it can be lost when there is a sudden power cut. 	<ul style="list-style-type: none"> • Information stored is permanent unless one deletes it intentionally.
Expense	
<ul style="list-style-type: none"> • Primary memory devices are more expensive than secondary storage devices. 	<ul style="list-style-type: none"> • Secondary memory devices are less expensive when compare to primary memory devices.
Volatility	
<ul style="list-style-type: none"> • Primary memory varies nature: <ul style="list-style-type: none"> • RAM- volatile in nature • ROM- non-volatile 	<ul style="list-style-type: none"> • It's always non-volatile in nature.
Speed	
<ul style="list-style-type: none"> • It is very fast in interacting with micro processor. 	<ul style="list-style-type: none"> • It is little slow in interacting with micro processor.

Storage Capacity	
<ul style="list-style-type: none"> Primary memory has limited storage capacity. 	<ul style="list-style-type: none"> Secondary memory can store bulk amounts of data in a single unit.
Examples	
<ul style="list-style-type: none"> RAM ROM Cache memory PROM EPROM Registers 	<ul style="list-style-type: none"> Magnetic Tapes Optical Disc Floppy Disks Flash memory (USB drives) Paper Tape Punched cards

17.7 SHORT QUESTIONS

Q.1 Differentiate between RAM and ROM. (K.B)

Ans:

DIFFERENTIATION

RAM and ROM can be differentiated as:

RAM	ROM
Function	
<ul style="list-style-type: none"> RAM stands for Random Access Memory. It is a part of main memory that is used in the normal operations of a computer once the operating system has been loaded. 	<ul style="list-style-type: none"> ROM Stands for Read Only Memory. . It is a part of main memory that is used primarily in the startup process of a computer.
Writing Speed	
<ul style="list-style-type: none"> Writing data to a RAM chip is a faster process 	<ul style="list-style-type: none"> Writing data to a ROM chip is a much slower process
Volatility	
<ul style="list-style-type: none"> A RAM chip is volatile, which means it loses any information it is holding when the power is turned off. 	<ul style="list-style-type: none"> A ROM chip is a non-volatile storage medium, which means it does not require a constant source of power to retain the information stored on it.
Storage Type	
<ul style="list-style-type: none"> RAM is for temporary storage. 	<ul style="list-style-type: none"> ROM is meant for permanent storage

Q.2 What are pits and lands? (K.B)**Ans:** PITS AND LANDS

Compact Disk is a molded plastic disc on which digital data is stored in the form of microscopic reflecting and nonreflecting spots which are called “pits” and “lands” respectively.

- Pits are the spiral tracks encoded on the top surface of CD
- Lands are the areas between pits

A fine laser beam scans the surface of the rotating disk to read the data. Pits and lands reflect different amount of the laser light falling on the surface of CD. This pattern of different amount of the light reflected by the pits and the lands is converted into binary data.

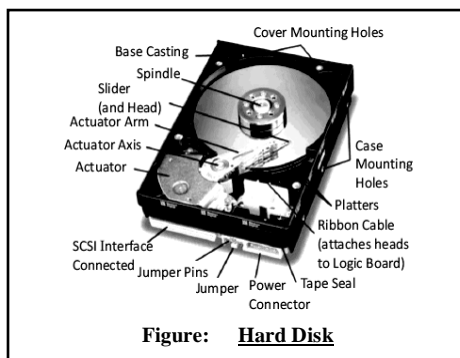
- The presence of pit indicates ‘1’
- Absence of pit indicates ‘0’

Q.3 What do you know about hard disk? (K.B)

(LHR 2015, 2016)

Ans: HARD DISK

Most users rely on hard disks as their primary storage devices. A hard disk is a rigid, magnetically sensitive disk that spins rapidly and continuously inside the computer chassis or in a separate box connected to the computer housing. This type of hard disk is never removed by the user. A typical hard disk consists of several platters, each accessed via a read/write head on a moveable arm.

**Figure: Hard Disk**

In computer hard drive, each platter has a magnetizable coating on each side. The spindle motor turns the platters at several thousand revolution per minute (rpm). There is one read-write head on each surface of each platter.

17.7 MULTIPLE CHOICE QUESTIONS

- Which statement is incorrect for primary memory? (K.B)**
 - It consists of integrated circuit
 - It vanishes when computer is switched off
 - Read only memory
 - Random access memory
- Which statement is correct about secondary memory? (K.B)**
 - Data storage devices are secondary memory
 - Store data permanently in computer
 - Audio-video cassettes are secondary storage devices
 - All given are true
- Which is small magnetically sensitive, flexible, plastic wafer housed in plastic case? (K.B)**
 - Floppy
 - Cassete
 - Video-disk
 - Audio disk

4. **Floppy is coated with: (K.B)**
 (A) Magnetic oxide (B) Sulphuric oxide
 (C) Potassium oxide (D) Silver oxide
5. **Which is rigid, magnetically sensitive disk that spins rapidly and continuously inside the computer chassis? (K.B)**
 (A) Floppy (B) Hard disk
 (C) Cassete (D) Compact disk
6. **A CD can store computer data: (K.B)**
 (A) 680 megabyte (B) 660 megabyte
 (C) 620 megabyte (D) 610 megabyte
7. **A DVD can store computer data up to: (K.B)**
 (A) 17 gigabytes (B) 15 gigabytes
 (C) 14 gigabytes (D) 12 gigabytes
8. **Which is small storage device that can be used to transport files from one computer to another? (K.B)**
 (A) Compact disk (B) Hard disk
 (C) Flash drive (D) Floppy disk

17.8**APPLICATIONS OF COMPUTER****LONG QUESTIONS**

Q.1 What do you understand by the term word processing and data managing?

(K.B+U.B+A.B)

(LHR 2015)(Review Question 17.10)

WORD PROCESSING**Definition:**

Word processing is such a use of computer through which we can write a letter, article, and book or prepare a report. Word processing is a computer program.

Features:

Using this program:

- We can develop any document; see it on the screen after typing.
- We can edit the document, add some new text or delete the previous text or make amendments in it.
- We can move text from one page to another, even from one document to another.
- Document can be stored in memory and its print can also be taken.
- By means of modern word processing, we can write it in different styles and in different colors. We can also use graphics.

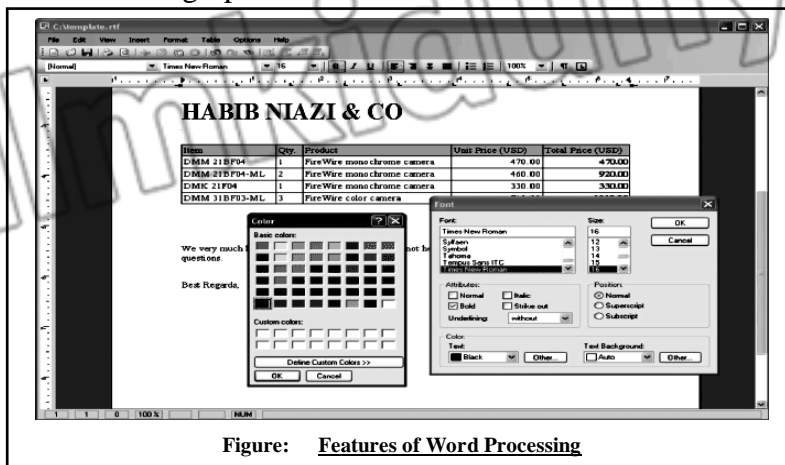


Figure: Features of Word Processing

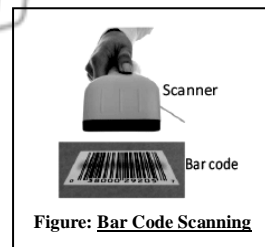
DATA MANAGEMENT**Definition:**

“To collect all information regarding a subject for any purpose and to store them in the computer in more than one inter linked files which may help when needed, is called data managing”.

Uses:

Data management is a need of time. Some of its uses are given below:

- The educational institutions, libraries, hospitals and industries store the concerned information by data management. Additions and deletions are made in the data according to the requirement, which help in the improvement of the management of the institutions.
- In big departmental stores and super markets, optical scanners are used to read, with the help of a Laser Beam, the barcodes of a product which indicate the number at which this product is recorded in the register .In this way, the detail about its price is obtained. The central computer monitors the bills and the related record of the sold goods. It also helps placing the order of goods being sold in a large quantity and to decide about less selling goods.

**17.8 SHORT QUESTIONS**

Q.1 Define word processing and data management. (K.B)

WORD PROCESSING**Definition:**

“Word processing is such a use of computer through which we can write a letter, article, and book or prepare a report. Word processing is a computer program”.

DATA MANAGEMENT**Definition:**

“To collect all information regarding a subject for any purpose and to store them in the computer in more than one inter linked files which may help when needed, is called data management”.

17.8 MULTIPLE CHOICE QUESTIONS

1. The process to draw and required line of pictures on a computer screen using, mouse or key board is called : (K.B)

(A) Graphic designing	(B) Line designing
(C) Data designing	(D) Picture designing
2. To collect information for a special purpose and to store it in the computer in more than one interlinked is called: (A.B)

(A) Data base	(B) Data Storing
(C) Data managing	(D) Data processing
3. Data management technique is used by: (A.B)

(A) Educational Institute	(B) Hospitals
(C) Libraries	(D) All of the above
4. If CD is made of metal or glass then it is called as: (K.B) (Do you know Pg. # 167)

(A) Hard Disk	(B) Floppy Disk
(C) CD ROM	(D) Flash Drive
5. If CD is made of soft elastic material then it is called as: (K.B) (Do you know Pg. # 167)

(A) Hard Disk	(B) Floppy Disk
(C) CD ROM	(D) Flash Drive

17.9**INTERNET****17.10****RISKS OF ICT TO SOCIETY AND THE ENVIRONMENT****LONG QUESTIONS**

Q.1 What is internet? Internet is a useful source of knowledge and information. Discuss.
(K.B+A.B+U.B)

(LHR 2016)(Review Question 17.11)

Ans:

INTERNET**Introduction:**

When many computer networks of the world were connected together, with the objective of communicating with each other, Internet was formed. In other words, we can say that Internet is a network of networks, which spreads all across the globe.

Size of Internet:

Initially the size of internet was small. Soon, people became aware of its utility and advantages and within short span of time, numerous computers and networks got themselves connected to Internet. Its size has increased multi folds within few years. Today Internet comprises of several million computers. There is hardly any country of the world and important city of the country, where Internet is not available.

Working Principle:

Internet is basically a large computers network, which extends all across the globe. In Internet, millions of computers remain connected together through well-laid communication system. We know that telephone communication system is well-defined, time proven system. Internet makes use of this system and many other systems to connect all the computers. Thus like a telephone connection, any computer of any city can establish a connection with any other computer of any other city and exchange data or messages with it.

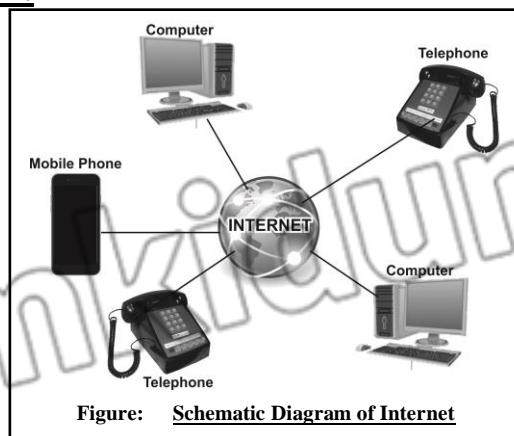
Conceptual Diagram:

Figure: **Schematic Diagram of Internet**

Internet services:

(LHR 2017, GRW 2017)

The main services used on the internet include:

- Web browsing - this function allows users to view web pages using a web browser.
- E-mail - Allows people to send and receive text messages.

Uses of Internet:

Internet has proved to be very beneficial to us. Here is the list of use of internet.

Big Source of Information:

Access of internet to people is increasing day by day. Internet is a useful source of information and knowledge. It provides us online research papers, lectures, notes and many other things of information. We can know about multinational companies and different government departments just by clicking their sites. We can know about vacancies and job through internet. We can share out personal information to the globe as well.

E-Learning:

Getting knowledge from internet is called E-Learning. Millions of students are doing online degrees being offered by different universities. With the help of internet we can watch online lectures. In Pakistan Virtual University is a best step in this regard.

Faster Communication:

Internet is a wonder of the computer science. The world has become global village. Contact can be made at any time during the day or night on internet. With broadband we can download information in seconds. E-mail transmits and receives our messages almost instantaneously. . We can talk to our friends and relatives across the continents with less cost. A web cam enables us to hear and see the person we are speaking to.

Source of Entertainment:

Internet is a global web of more than several million nets in which more than 50 million computers are operating and several million people participate through the world. The number is increasing day by day. Contact can be made at any time during the day or night on internet. We can watch online matches, news and we can also play online games for entertainment.

Access to Social Media

Internet has provided us social media like Facebook, Twitter, Whatsapp and Instagram etc. that have made the world a global family.

Access to Online Services:

Internet has given us the opportunity to gain access to online services provided by different companies and Governments e.g. online renewal of passport, online booking of airline tickets, online shopping etc.

E-commerce:

E-commerce is the way of doing business on the web. We can order our favorite book or any other items on line. For instance, Amazon.com has been selling books, music and video successfully for years. As time passes on, supermarkets and trading companies will be selling more of their goods on line.

Home Banking

Now-a-days, home banking is operating on telephones. We can find our bank balance from the bank on phone, can pay all kinds of bills and transfer our funds by pressing a key of our personal identification number. The bank computer, after our identification, sends us all required information. With the help of ATM machines (Automatic Teller Machine), we can draw money at any time we want.

Q.2 What is E-mail? Write its advantages. (K.B+U.B+A.B)

(LHR 2015)

Ans:

E-MAIL

One of the most widely used application of internet is electronic mail (or e-mail), which provides very fast delivery of messages to any enabled site on the Internet. Communication through e-mail is more quick and reliable. Through our e-mail, we can communicate with our friends and institution with more ease and pace.

Advantages of E-Mail:

(LHR 2014)

Some advantages of E-mail are as follows:

Fast Communication:

We can send messages anywhere in the world instantly.

Cost Free Service:

If we have an internet access, then we can avail the e-mail service free of cost.

Simple to Use:

After initial set up of e-mail account, it is easy to use.

More Efficient:

We can send our message to many friends or people only in one action.

Versatile:

E-mail is a versatile source of communication it means we can not only send text messages through email but we can also send pictures or other files through e-mail in the form of attachments.

Q.3 What are browsers? Write names of different browsers. (K.B+A.B+U.B)

Ans:

BROWSERS**Definition:**

“A browser is an application which provides a window to the Web. All browsers are designed to display the pages of information located at Websites around the world”.

Examples:

- Internet Explorer
- The World
- Opera
- Safari
- Mozilla Firefox
- Chrome

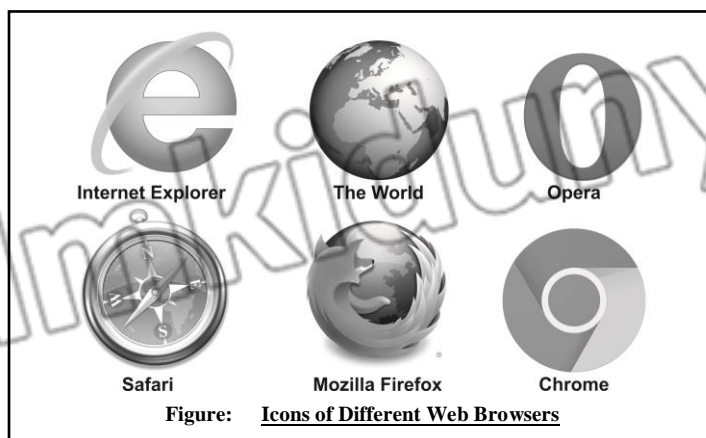


Figure: Icons of Different Web Browsers

Browsing:

Searching something on internet and viewing webpages is called browsing. Browsing is great service provided by internet. For browsing we use different browsers like Google Chrome, Internet Explorer, Mozilla Firefox, etc.

Q.4 What are risk of ICT to society and environment? How can we minimize them?
(K.B+A.B)

(LHR 2015)

Ans: **RISK OF ICT TO SOCIETY AND ENVIRONMENT**

In the modern age we are expected to rely upon information technology. But blind faith in modern technology may be dangerous in many cases.

Health Problems:

Over use of computer is dangerous for our health. Long exposure to computer screen badly effects our eyesight and puts stress to our nerves

Computer Crimes:

Computer crimes are also very common these days. Computer crime is defined as any crime accomplished through knowledge or use of computer technology.

Types:

Computer crimes are of different types:

Theft:

There is also a word theft. Theft is the most common form of crime. Computers are used to steal money, goods, information and computer resources.

Piracy:

Piracy is another issue of importance which is common on computer. It is the illegal duplication of copyright material like books, papers and software etc.

Hacking:

Hacking is still another illegal activity which is committed on computers. It is an unauthorized access to computer systems of other persons. Computers hackers can damage some organizations by stealing their credit cards and valuable information.

Precautions:

One way to reduce the risk of security breaches is to make sure that only authorized person have access to computer equipment. We may be granted access to computer based on some passwords.

We can use a key, an ID card with photo, an ID number, a lock combination, our voice print or finger print as password to secure our computer.

17.9, 17.10 SHORT QUESTIONS

Q.1 Write any two risks of ICT in society and environment. (K.B)

RISKS OF ICT

The risks of ICT in society and environment are as follows:

Health Problems:

Over use of computer is dangerous for our health. Long exposure to computer screen badly effects our eyesight and puts stress to our nerves

Hacking:

Hacking is still another illegal activity which is committed on computers. It is an unauthorized access to computer systems of other persons. Computers hackers can damage some organizations by stealing their credit cards and valuable information.

Q.2 Enlist uses of internet. (A.B)**USES OF INTERNET**

The uses of internet are as follows:

- Faster communication
- Big source of information
- Source of entertainment
- Access to social media
- Access to online services
- E-commerce
- E-learning

Q.3 Write advantages of E-mail. (A.B)**ADVANTAGES OF E-MAIL**

Some advantages of E-mail are as follows:

Fast Communication:

We can send messages anywhere in the world instantly.

Cost Free Service:

If we have an internet access, then we can avail the e-mail service free of cost.

Simple to Use:

After initial set up of e-mail account, it is easy to use.

More Efficient:

We can send our message to many friends or people only in one action.

Versatile:

E-mail is a versatile source of communication it means we can not only send text messages through email but we can also send pictures or other files through e-mail in the form of attachments.

17.9, 17.10 MULTIPLE CHOICE QUESTIONS**1. Which one is not risk of ICT? (K.B)**

- | | |
|------------|----------------|
| (A) Piracy | (B) Hacking |
| (C) Theft | (D) E-commerce |

2. Which one is not a browser? (K.B)

- | | |
|-----------|------------|
| (A) Opera | (B) Safari |
| (C) Linux | (D) Chrome |

3. Allows user to view web pages: (K.B)

- | | |
|--------------|--------------|
| (A) Data | (B) E-mail |
| (C) Browsing | (D) MS. Word |

4. The most common form of crime in computer technology is: (K.B)

- | | |
|------------|----------------|
| (A) Piracy | (B) Hacking |
| (C) Theft | (D) E-commerce |

5. Also called Global web: (K.B)

- | | |
|--------------|------------------|
| (A) Computer | (B) Mobile phone |
| (C) Internet | (D) Satellite |

(Interesting Information Pg. # 169)

MCQ'S ANSWER KEY (TOPIC WISE)**17.1 INFORMATION AND COMMUNICATION TECHNOLOGY****17.2 CBIS**

1	2	3	4	5	6	7	8	9	10
D	B	D	D	D	A	D	A	A	C

17.3 FLOW OF INFORMATION**17.4 TRANSMISSION OF ELECTRICAL SIGNAL****THROUGH WIRES**

1	2	3	4	5	6	7	8	9	10
B	C	B	C	D	A	A	D	C	B

17.5 TRANSMISSION OF RADIOWAVES THROUGH SPACE**17.6 TRANSMISSION OF LIGHT SIGNALS THROUGH****OPTICAL FIBRES**

1	2	3	4	5	6	7	8	9	10	11	12
D	A	D	C	A	C	C	B	A	C	C	B
13	14	15	16	17	18	19	20	21	22	23	24
D	C	B	D	B	D	C	B	B	B	D	A
25	26										
B	C										

17.7 INFORMATION STORAGE DEVICES

1	2	3	4	5	6	7	8
B	D	A	A	B	A	A	C

17.8 APPLICATIONS OF COMPUTER

1	2	3	4	5
A	C	D	A	B

17.9 INTERNET**17.10 RISKS OF ICT TO SOCIETY AND THE ENVIRONMENT**

1	2	3	4	5
D	C	C	B	C

TEXT BOOK EXERCISE**MULTIPLE CHOICE QUESTIONS**

Choose the correct answer from the following choices:

- i. **In computer terminology information means: (K.B)** (LHR 2015, GRW 2017)
 (a) any data (b) raw data
 (c) processed data (d) large data
- ii. **Which is the most suitable means of reliable continuous communication between an orbiting satellite and Earth? (K.B)**
 (a) microwaved (b) radio wave
 (c) sound waves (d) any light waves
- iii. **The basic operations performed by a computer are: (K.B)**
 (a) arithmetic operations (b) non-arithmetic operations
 (c) logical operations (d) both A and C
- iv. **The brain of any computer system is: (K.B)** (LHR 2017)
 (a) monitor (b) memory
 (c) cPU (d) control memory
- v. **Which of the following is not processing? (U.B)** (GRW 2015)
 (a) arranging (b) manipulating
 (c) calculating (d) gathering
- vi. **From which of the following you can get information almost about everything. (K.B)**
 (a) book (b) teacher
 (c) computer (d) internet
- vii. **What does the term e-mail stands for? (K.B)** (LHR 2016, GRW 2016, 2017)
 (a) emergency mail (b) electronic mail
 (c) extra mail (d) external mail

ANSWER KEY

i	ii	iii	iv	v	vi	vii
a	b	d	c	b	d	b

REVIEW QUESTIONS

17.1 What is difference between data and information?

Ans: (See Topic 17.1 & 17.2, Short Question-2)

17.2 What do you understand by Information and Communication Technology (ICT)?

Ans: (See Topic 17.1 & 17.2, Short Question-3)

17.3 What are the components of information technology? Clearly indicate the function of each component.

Ans: (See Topic 17.1 & 17.2, Long Question-1)

17.4 Differentiate between the primary memory and the secondary memory.

Ans: (See Topic 17.7, Long Question-4)

17.5 Name different information storage devices and describe their uses.

Ans: (See Topic 17.7, Long Question-2)

17.6 Explain briefly the transmission of Radiowaves through space.

Ans: (See Topic 17.5 & 17.6, Long Question-1)

17.7 How light signals are sent through optical fibre?

Ans: (See Topic 17.5 & 17.6, Long Question-3)

17.8 What is computer? What is the role of computer in everyday life?

Ans: (See Topic 17.5 & 17.6, Long Question-4)

17.9 What is the difference between hardware and software? Name different softwares.

Ans: (See Topic 17.1 & 17.2, Short Question-5)

17.10 What do you understand by the term word processing and data managing?

Ans: (See Topic 17.8, Long Question-1)

17.11 What is Internet? Internet is a useful source of knowledge and information. Discuss.

Ans: (See Topic 17.9, Long Question-1)

17.12 Discuss the role of information technology in school education.

Ans:

ROLE OF INFORMATION TECHNOLOGY

Information and communication technologies ICT are extremely influencing every discipline under the sun including Education. Impact of ICT and its potential for the education field is manifold. It positively affects all the stakeholders of the education field as:

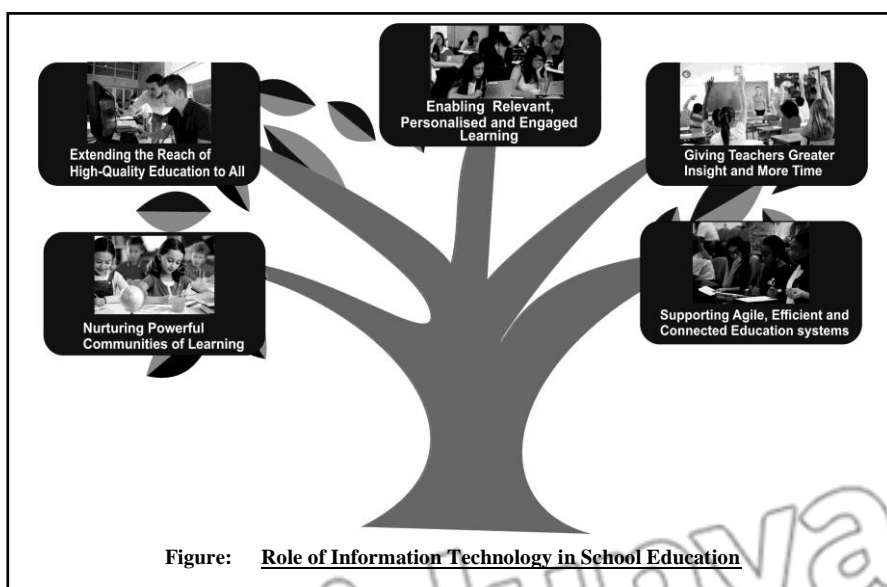


Figure: Role of Information Technology in School Education

- It is affecting every aspect of education from teaching-learning to assessment and evaluation.
- It improves the effectiveness of education. It aids literacy movements.
- It enhances scope of education by facilitating mobile learning and inclusive education.
- It facilitates research and scholarly communication.
- Information technology is extending the reach of high quality education to all by e-learning and online courses.
- Information technology is nurturing powerful communities of learning even via social media.

Conclusion:

Information technology is supporting agile, efficient and connected education system throughout the world.

CONCEPTUAL QUESTIONS

17.1 Why optical fibre is more useful tool for the communication process?

Ans: OPTICAL FIBRE

The advantage of optical fibre is that it can be used for sending very high data rates over long distances. This feature of fibre optics distinguishes it from wires and makes it more useful tool for the communication process. When electrical signals are transmitted through wires, the signal lost increases with increasing data rate. This decreases the range of the signal. While optical fibres work on the principle of Total internal reflection that minimizes signal loss.

17.2 Which is more reliable floppy disk or a hard disk?

Ans: MORE RELIABLE

Floppies are inexpensive, convenient but are not much reliable as they lack the storage capacity and drive speed form many large jobs. There is also a risk of data loss stored on floppy. We do not face such problems in the care of hard disk which is, therefore, more reliable than a floppy.

17.3 What is the difference between RAM and ROM memories?

Ans: DIFFERENTIATION

RAM and ROM can be differentiated as:

RAM	ROM
Function	
<ul style="list-style-type: none"> RAM stands for Random Access Memory. It is a part of main memory that is used in the normal operations of a computer once the operating system has been loaded. 	<ul style="list-style-type: none"> ROM Stands for Read Only Memory. . It is a part of main memory that is used primarily in the startup process of a computer.
Writing Speed	
<ul style="list-style-type: none"> Writing data to a RAM chip is a faster process 	<ul style="list-style-type: none"> Writing data to a ROM chip is a much slower process
Volatility	
<ul style="list-style-type: none"> A RAM chip is volatile, which means it loses any information it is holding when the power is turned off. 	<ul style="list-style-type: none"> A ROM chip is a non-volatile storage medium, which means it does not require a constant source of power to retain the information stored on it.
Storage Type	
RAM is for temporary storage.	ROM is meant for permanent storage

SELF TEST

Time: 40 min.

Marks: 25

Q.1 Four possible answers (A), (B), (C) & (D) to each question are given, mark the correct answer. (6×1=6)

1. The speed of sound in air is:

- | | |
|--------------------------------|--------------------------|
| (A) 1246 kmh ⁻¹ | (B) 346 ms ⁻¹ |
| (C) 300000000 ms ⁻¹ | (D) Both A & B |

2. 1 MB = ?

- | | |
|----------------|--------------------|
| (A) 1000 bytes | (B) 1024 bytes |
| (C) 100 bytes | (D) 1024 kilobytes |

3. Floppy is coated with:

- | | |
|--------------------|---------------------|
| (A) Magnetic oxide | (B) Potassium oxide |
| (C) Silver oxide | (D) Sulphuric oxide |

4. A CD can store over computer data of:

- | | |
|------------------|------------------|
| (A) 680 megabyte | (B) 660 megabyte |
| (C) 620 megabyte | (D) 610 megabyte |

5. Which of the following is not processing?

- | | |
|-----------------|------------------|
| (A) Arranging | (B) Manipulating |
| (C) Calculating | (D) Gathering |

6. Which is more compact and portable?

- | | |
|--------------|------------------|
| (A) Desktop | (B) Laptop |
| (C) Computer | (D) All of these |

Q.2 Give short answers to following questions. (5×2=10)

- i. Differentiate between data and information.
- ii. Write a note on working of radio tuning circuit.
- iii. Define bit and byte.
- iv. Write uses of internet.
- v. What do you understand by the term 'Flow of Information'?

Q.3 Answer the following questions in detail. (4+5=9)

- a) What is computer? Also describe the role of computer in every day of life.
- b) Write the advantages and disadvantages of floppy disks.

Note:

Parents or guardians can conduct this test in their supervision in order to check the skill of students.