Chapter = 18

Information and Communication Technology

Q1.Define Information technology, Telecommunication

Information technology

Information technology is the scientific approach for storing information, organizing it for optimal use, and communicating it to others.

Telecommunication

The process of transmitting information over long distances is known as telecommunication.

Q2.What do know about Information and Communication Technology (ICT)?

Information and Communication Technology

ICT refers to the scientific techniques and tools to process, and transport large volumes of information in a matter of seconds using electronic devices.

Q3.what are Components of Computer Based Information System (CBIS)

Five components must come together to create a CBIS as shown in figure below.

1. **Hardware is machinery**

This comprises the CPU and its supporting hardware. Input/output, storage, and communication devices are examples of essential equipment.

2. **Software**

Software includes computer applications. They tell the CBIS's hardware how to process data and turn it into meaningful information. Programs are usually saved on chips or tapes.

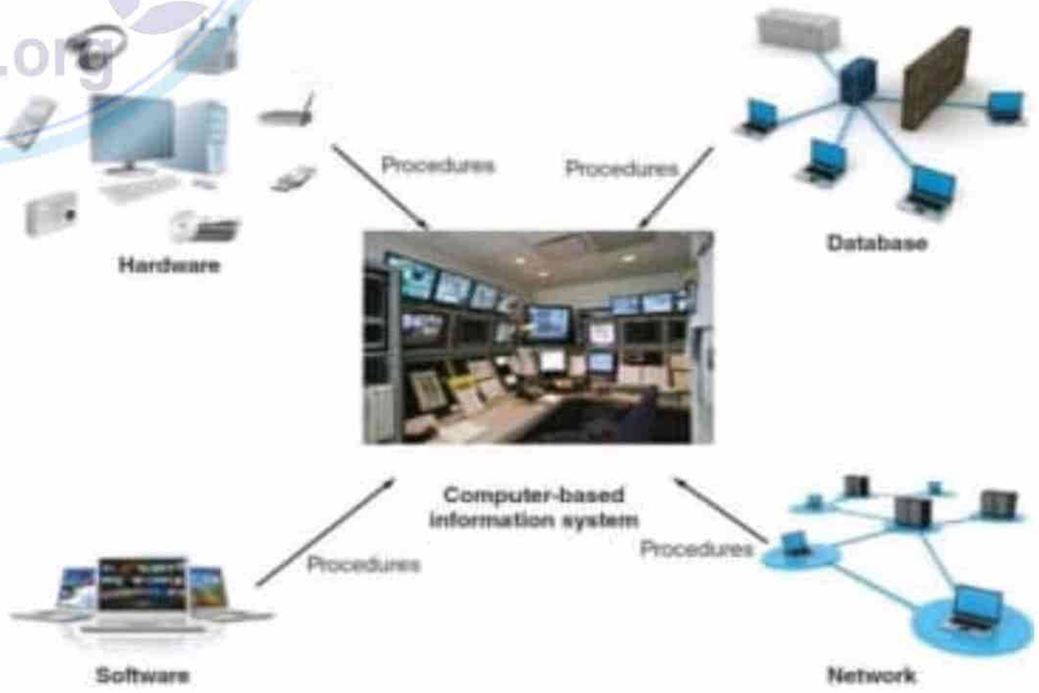
3. **Data**

Programs utilize data to provide helpful information. It might be a phrase, picture, or figure that has special significance. Data, like programmers, are usually saved on chips or tapes until needed by the computer.

4. **Procedures**

The guidelines for creating and using information systems. These are in user manuals and papers. From time to time, these rules or techniques may be revised. In order to accommodate these adjustments, the information system must be adaptable.

5. **People**



A CBIS is useless without individuals who can impact the success or failure of information systems. People develop and maintain the software, enter data, and construct the hardware that makes a CBIS work. People write the processes and ultimately decide the CBIS's effectiveness.

Q4. What are input and output hardware

Input hardware

The devices that are used to command the data to the computer are known as input hardware devices.

Example

Mouse, joystick and keyboard.

Output hardware

The devices that are used to display processed data are known as output hardware.

Example

Loudspeaker, screen, printer.

Q5. What do you know about System software and Application software.

System software

System software is a type of computer program that is designed to run a computer's hardware and application programs.

Application software

Application software is a type of computer program that performs a specific personal, educational, and business function.

Q6. Define the Flow of Information with example.

Electronic and optical equipment can be used to transfer information from one place to another place, which is called flow of information.

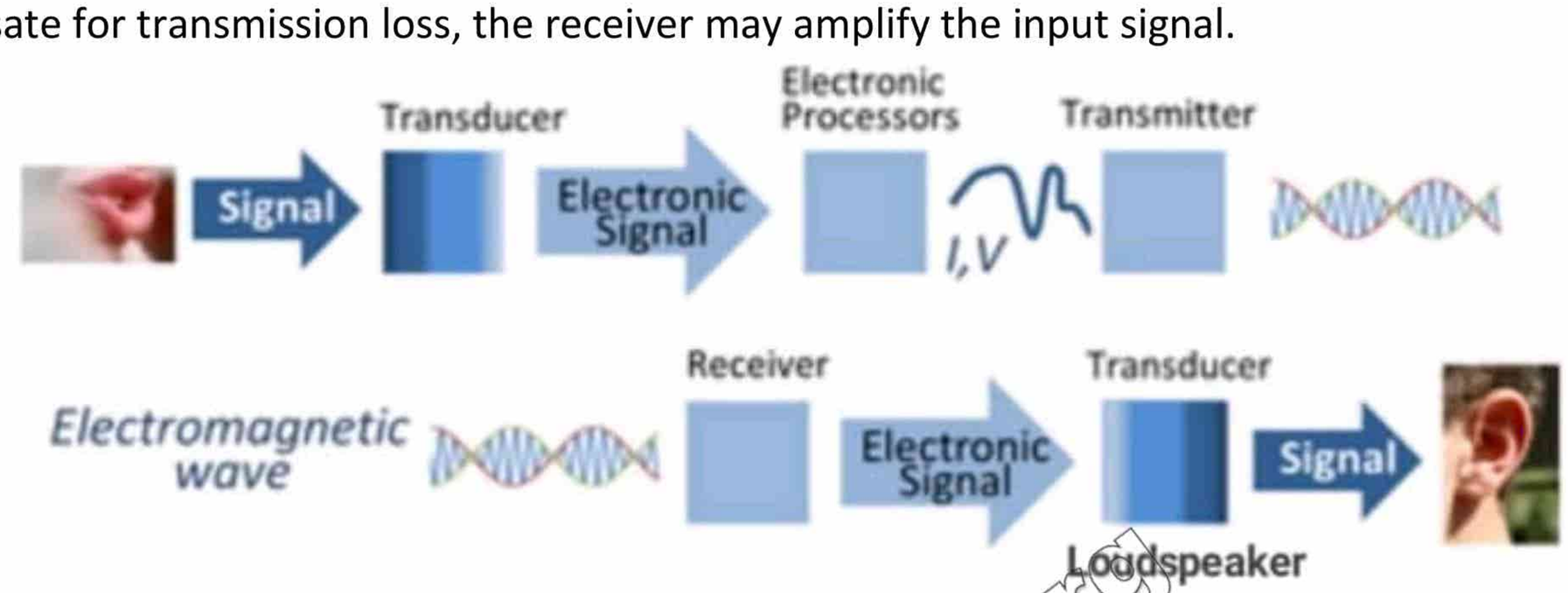
Example 1: When you use a phone, electrical impulses are used to transmit data via cables.

Example 2: Radio, television, and mobile phones provide information by electromagnetic waves or light via optical fibers.

Q7. What are the Communication system?

Communication system

Figure below shows a communication system. The transmitter, transmission channel, and receiver are three of the most important parts of any communication system.
The input signal is processed by the transmitter. The transmission channel is the medium used to transmit the signal. Wires or coaxial cables may be used in the same way as radio-wave and optical fiber cables. The transducer receives the output signal from the receiver after it has been processed. To compensate for transmission loss, the receiver may amplify the input signal.



Q8. What is Transducer? Explain the various of it.

Transducer

Transducer is a device that converts one form of energy into other form of energy.

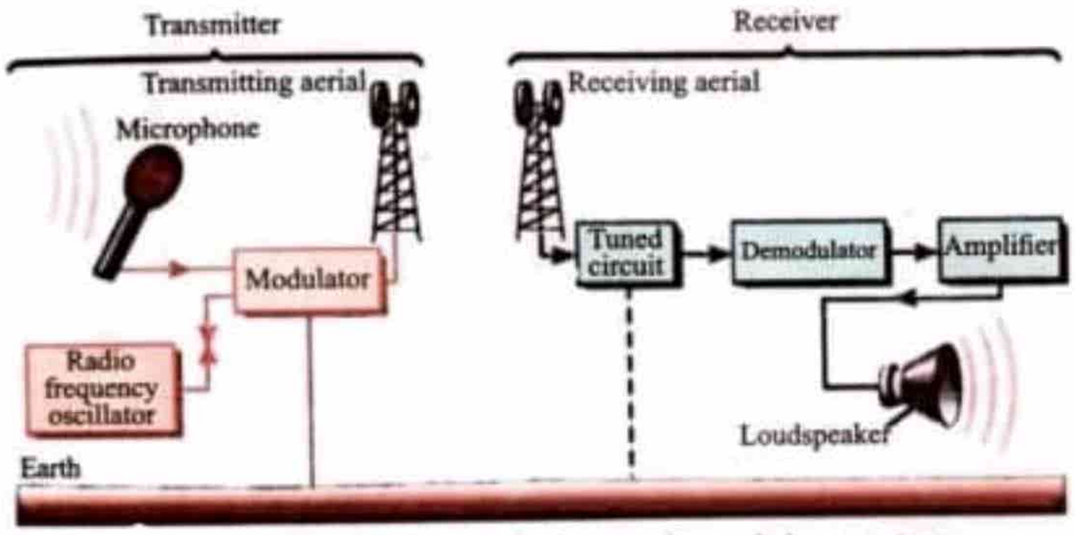
Transmission Of Electrical Signal Through Wires

The mouthpiece and the earpiece are two elements of the telephone system as shown in figure below.
A thin metal diaphragm and carbon granules are found in the mouthpiece and receiver, respectively. The diaphragm vibrates as we speak through the mouthpiece. An electrical current may travel through the wire because the diaphragm vibrates slightly, compressing the carbon.
At the opposite end of the line, the receiver reverse this procedure. An electromagnet in the receiver generates a changing magnetic field as a result of the electrical current. As a result of the receiver's thin metal diaphragm vibrating due to the magnetic field, sound is produced.

Telephone

Transmissions Of Radio Waves Through Space

The microphone converts the radio station's sound waves into electrical impulses. The transmission aerial consists of an antenna, and these signals are subsequently fed into the antenna.
Electromagnetic radio waves are produced when the charges on the transmission antenna vibrate in response to electrical signals.



Radio transmission and receiving system

The modulated signal is selected and amplified by the receiver at the other end. In order to get at the information signal, we need to use the demodulator, which extracts it. In Figure below, we see a radio broadcast and reception system
in action.

Fax machine

A fax machine is a need for many enterprises across the globe.

There are two essential functions in the use of fax machines: scanning the page and transmitting the resulting electronic signals over telephone line. An internal printer on the receiving system is used to print out a copy of the transmitted message once it has been converted by the software.

Cell phone

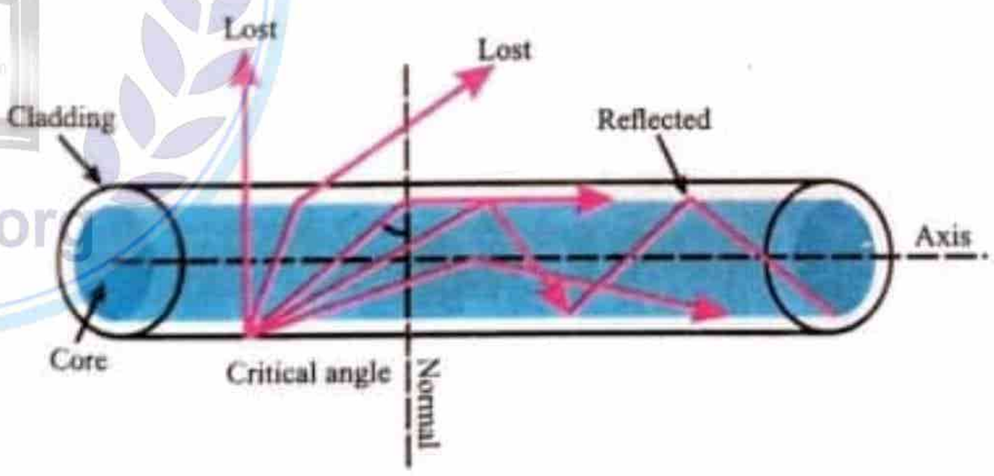
In mobile phones, radio technology is used and it is a sort of radio that allows for two-way communication between users.
There are radio transmitters and receivers built inside the mobile phone's internal components. To communicate, it uses radio waves to transmit and receive. When a mobile phone user makes a phone call, the sound waves of the caller are transformed into radio waves. As soon as this signal is received, it is routed to the caller's local base station and given a unique radio frequency. The receiver's base station receives this signal through mobile switching center (MSC), which transmits it to the transmitter. Afterwards, the caller's mobile phone is connected to the call. The radio waves are converted into sound once again by the mobile receiver as shown in figure below.

Photo phone

A photo phone is a phone by which we can transmit and receive sound as well as video.

Transmission Of Light Through Optical Fibers

Visible light waves are substantially higher in frequency than radio waves. This implies that light beams can convey information faster than radio waves or microwaves. An optical fiber was employed as a transmission path.



Light entering a glass rod at greater than the critical angle is trapped inside the glass

Light entering the core of an optical fiber travels straight and meets the inner wall (cladding). If the cladding incidence angle is below the critical angle, some light escapes the fiber optics and is lost as shown in figure below. It then proceeds in a straight path until it meets the inner wall again, and so on.

The benefit of optical fiber is that it can be used to transmit very large amounts of data across great distances with little loss of quality. This characteristic of fiber optics separates it from wire-based systems. Whenever electrical signals are transferred across wires, the signal loss rises in direct proportion to the increase in data rate delivered. As a result, the signal's range is reduced.

Q9.what do you know about the term Computer? Also give its uses.

Computer

A computer processes, stores, and displays data. Hardware and software are two components that are fundamental to the operation of a computer. "Hardware" is a physical component of computer. CPU, monitor, keyboard, and mouse are a few examples

Fig: 18.11 Laptop

Parts of a computer

Uses

Today, computers are employed in almost every field, including medicine, engineering, weather forecasting, transportation, and shopping malls.

Information Storage Devices

These are devices that can be used to store information in a computer.

Q10. What are Primary Memory and Primary Memory?

Primary Memory

Primary memory is made up of integrated circuits (ICs) that a processor or computer can access immediately.

Random Access Memory (RAM) is a region in the memory where running programmers and services may be accessed by the CPU. Whenever you turn off your computer, you lose all of your RAM's data. The second part of memory is called read-only memory (ROM), which is a type of storage medium that stores data on personal computers (PCs) and other electronic devices in a way that doesn't change it. Among its many functions, it handles the majority of a computer's input and output and stores any program or software instructions that are loaded during bootup.

Secondary storage devices

It is used to keep the data in the computer for a long time. When we open a software, data is transferred from secondary to main storage.

Example

Audio-video cassettes, hard discs, USBS, memory cards are the few examples of secondary storage devices.

Audio cassette

Q11. What do you know about Audio And Video Cassettes?

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

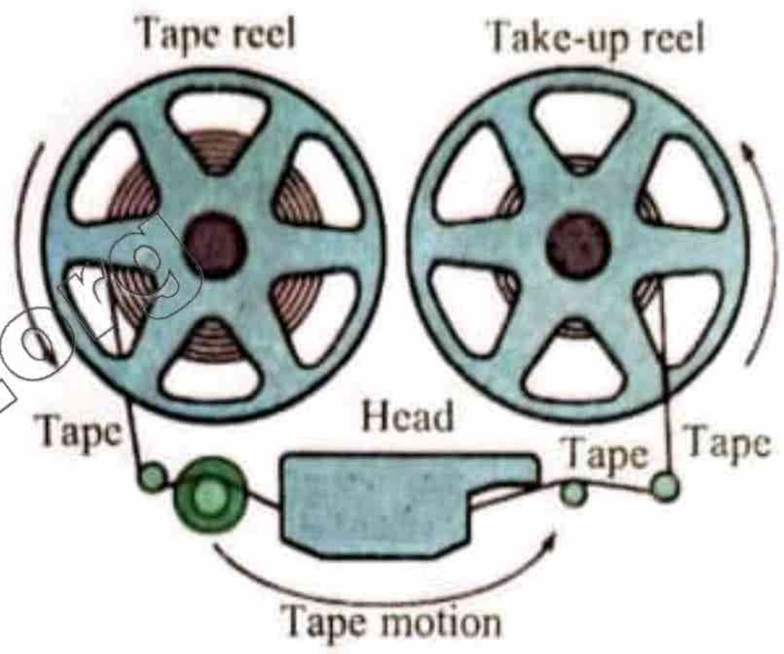
Recording of sound

For recording of sound, 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.

Producing sound again

To produce the sound again, the tape is moved past the play back head. Changes in 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.



A magnetic tape storage mechanism

Fig: 18.15
Video cassette

Q12. What is Magnetic Disks?

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 and 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.

Q13. what is a Floppy disk?

Floppy disk

A floppy disc Figure below 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.

Q14. What is a Hard Disk?

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.

Hard disk

Compact Disc (CDs)

It's a molded plastic disc with tiny "pits" and "lands" that store digital data. Pits are CD's spiral tracks and lands lie between them. A laser beam scans the disc to read data. CD pits and lands reflect laser light differently. This pattern of pit and land light reflection is transformed to binary data. The lands represent '1' and the bits represent '0'. CDs can contain 680 MB of data.

Q15. What do you know about the Flash Drive?

Flash Drive

It is an electronics device and has Integrated circuits (ICs) that store data. A flash drive may transfer data between computers. This device can hold a year's load of schoolwork. We may connect it to our key chain, or book bag.

Because of flash derive; we don't need to bring a hard drive or laptop with us when we move around the world.

Flash drive

Q16. What is Word Processing?

Word Processing

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

Q17. What is Data Management? Give its uses.

Data Management

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:

- The educational institutions, libraries, hospitals and industries store the concerned information by data management.
- In big departmental stores and supermarkets, 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; Figu.re below. In this way, the detail about its price is obtained.
- NADRA, biggest data managing authority of Pakistan that manage the data of citizens through the internet by issuing computerized identity card and Form B.

Q18. What is Internet? How Internet uses communication system?

Internet is a network of networks, which spreads all across the globe.

Internet uses communication system

Recall 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.

Q19. What is HTTP? Name the Internet Services.

HTTP HTTP, in full Hyper Text Transfer Protocol, standard application-level protocol used for exchanging files on the World Wide Web.

Internet Services

The main services used on the internet include:

- Web browsing - this function allows users to view webpages.
- E-mail - Allows people to send and receive text messages.

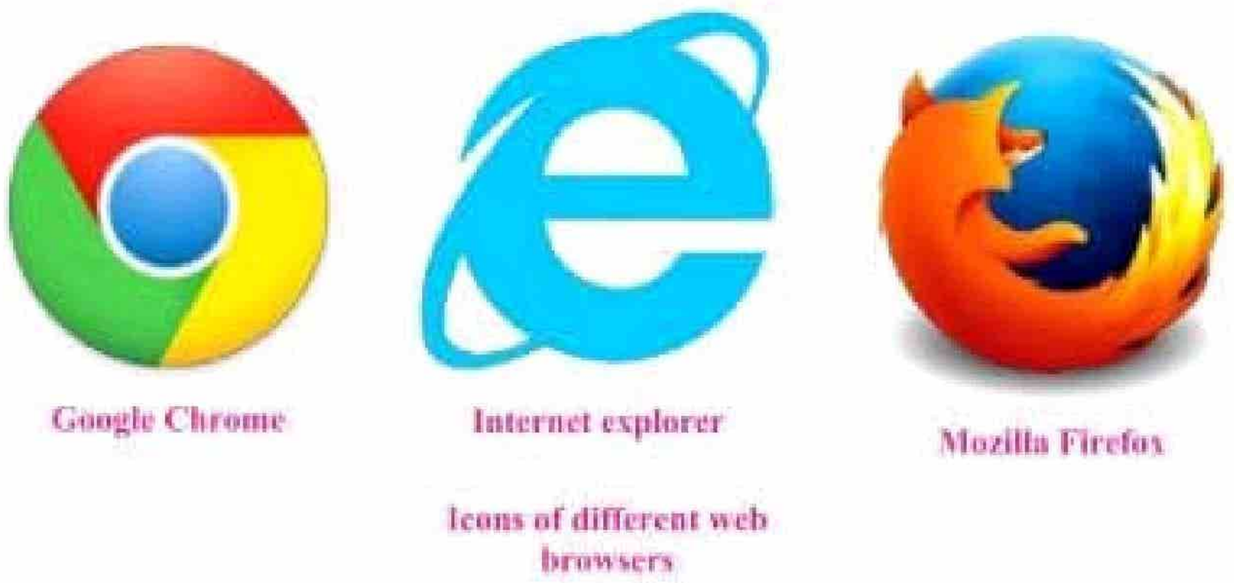
Q20. What is a Browsers?

Browsers

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

Most popular browsers

The most popular browsers on the market today include Internet Explorer, The World, Opera, Safari, Mozilla Firefox, Chrome, etc.



Google Chrome Internet explorer Mozilla Firefox

Icons of different web browsers

What is an Electronic Mail? list down the Advantages of e-mail.

Electronic 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.

Advantages of e-mail

Some advantages of e-mail are as follows:

1) **Fast Communication** We can send messages anywhere in the world instantly.
2) **Cost Free Service** If we have an internet access, then we can avail the e-mail service free of cost.
3) **Simple to Use** After initial set up of e-mail account, it is easy to use.
4) **More Efficient** We can send our message to many friends or people only in one action.
5) **Sending of pictures or other files** Pictures or other files can also be sent through e-mail.

Q21. List the Uses of internet?

Uses of internet

Here is the list of use of internet.

1. Faster Communication
2. Big Source of Information
3. Source of Entertainment
4. Access to social media
5. Access to Online Services
6. E-commerce
7. E-Learning

Multiple Choice Questions (MCQs)

1. Another name for a supercomputer is a:

a) High-performance computer b) Maxi computer

c) Mainframe computer d) None

2. Input, processing, output, and storage are collectively referred to as:

a) Information processing cycle b) Software life cycle

c) Hardware life cycle d) Information technology

3. is the output from a computer that ranks from processing input data

a) Data b) Information c) Computer d) Mouse

4. Which one of the following is not considered as a system software?

a) Assembler b) Interpreter c) Compiler d) Tally

5. Which of the following is suitable for connecting different computers in an organized manner within an office building?

a) MAN b) WAN c) ANN d) LAN

6. A computer program that translates one program instruction at a time into machine language is called?

a) Interpreter b) CPU c) Compiler d) Simulator

7. The name given to a sequence of instructions in a computer language, to get the desired result is?

a) Program b) Decision table c) Pseudo code d) Algorithm

8. USB stands for

a) Ultra Serial Bus b) Unlimited Structured Bit

c) Universal Serial Bus d) Unified Status Bus

9. Which is the extension not suitable to an ms-word file

a) .doc b) .docx c) .rtf d) .jpeg

10. ICT stands for

a) Information and Communications Technology b) Integrated Circular Technology

c) Intensive Computer Techniques d) Interfacing Computer Theories Ans:

1.High-performance computer	2. Information processing cycle	3. Information	4. Tally	5. LAN
6. Interpreter	7. Program	8.Universal Serial Bus	9. .docx	10. Information and Communication Technology