# Information Technology

**Q1:** Write a short note on Artificial Intelligence.

Artificial intelligence is a branch of computer science in which we study how to make or create intelligent machines. Intelligent machines works automatically. They do not need human who operates them. They can work themselves. By using Artificial Intelligence, we create intelligent programs and algorithms, integrate them with machines. ~~These~~ ~~and~~ So machines works according to ~~those~~ those programs.

**Applications of AI:** ~~intell~~

AI can be used in many humans field. It has made it easier and cheaper for human to work.

① Artificial intelligence ~~late~~ is being used in medical field for the inspection of human inner body without surgry.

*[margin note in red: A bit short answer. Give the applications by giving subheadings.]*

② AI is being used as a translator to translate human languages.

③ AI is being used in robotics to trained them for specialized or general tasks.

④ AI is being used to automate cars.

⑤ AI is being used in Agriculture and many other fields also.

*[margin note in red: A 5 mark and should be on around 2 sides of a page.]*

**Q2** (A) Differentiate RAM & ROM (B) Name three basic buses (C) Draw Basic Computer block diagram (D) Classify computer on their shape size & speed.

(A) Ans:

| RAM | ROM. |
|---|---|
| ~~RAM stands Read Only Memory~~ | |

## Ans (A)

| RAM | ROM |
|---|---|
| ① RAM stands for Random Access Memory | It stands for Read only Memory |
| ② It is a volatile memory. | It is a non-voltaile memory |
| ③ It is fast. | It is slow as compared to RAM. |
| ④ It store data temporarily | It store data permanently. |

## Ans: (B)

There are three types of buses used in computer.

**Data Bus:**
This bus is used to carry data from one part of the computer to another. It can be 32 bit or 64 bit.

**Address Bus:**
Address Bus is used to carry address to which CPU or other part communicate. First we carry address then we used data bus for carrying data.

**Control bus:**
Control bus is used to control all the communicat among the computer parts. It plays a key role to work computer efficiently.
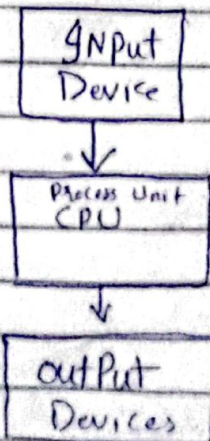
## Ans (C)

**Input Devices:**
These devices takes input from user or environment and send it to the CPU. Examples of input devices are keyboard, sensors etc.

**CPU:**
CPU process input data and perform all the necessary

```
┌──────────┐
│ INPut    │
│ Device   │
└──────────┘
     │
     ▼
┌──────────┐
│Process Unit│
│  CPU     │
└──────────┘
     │
     ▼
┌──────────┐
│ output   │
│ Devices  │
└──────────┘
```

Functions which are required and convert it into useful information and send it to output devices.

Output devices :
These device shows processed to the user such as Screen, speaker etc

← →

Ans (D)
Various types of Computers.

Super Computers : Super Compute are the fastest computers. They are very expensive and used in big organizations.

Mainframe Computers :
Mainframe Computers used in Organizations where multi-users requirements are more. It is ~~less fast~~ slower than super computers

Micro Computers : Micro computer are used in small organizations. They are very fast as compared to mini computers

Mini Computers : Mini computers are used where fast processing is required at individual or small organization level.

Personal Computers : They are used for personal use such as gaming, education etc

embedded computers : It is a type of machines in which a chip is integrate with machines. This chip has installed programs. So machine works according to that program.

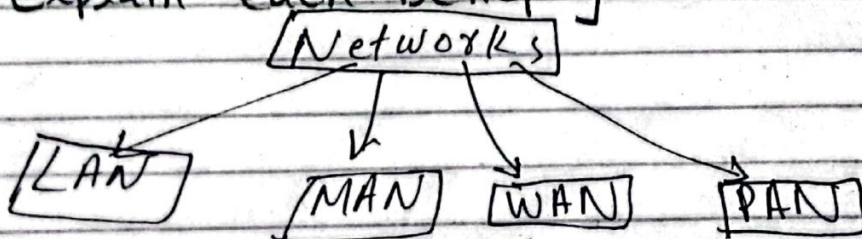**Q3.** Write a note on Hard Disk and How data is stored on Hard Disk.

Hard Disk : Hard Disk is a storage device which is used to store data permanently. Hard Disk is made of magnettic plates and consis of other parts such as sectors, read-write head etc. Hard Disk is faster than CD and USB. But it is slower than SSD.

How Data is stored on HD.

Hard Disk consist of different parts such as plates, sectors, Read-write heads etc. When we write data in a file, it is first stored on RAM temporarily. When we save that data it is stored on hard disk. Data is stored when read-write head writes data on platter which are divided into sectors. Data is written on sectors in the form of 0 and 1. So Data is written on hard disk when read-write head moves. In this way data is stored on hard disk.

Short answer.

**Q4.** what are the different types of computers? Explain each beriefly.

```
                  ┌──────────┐
                  │ Networks │
                  └──────────┘
          ┌────────┬────┴────┬──────────┐
      ┌───────┐ ┌───────┐ ┌───────┐ ┌───────┐
      │  LAN  │ │  MAN  │ │  WAN  │ │  PAN  │
      └───────┘ └───────┘ └───────┘ └───────┘
```

There are several types of networks, mainly networks are LAN, MAN, WAN, PAN.

LAN :
LAN stands for Local Area Network. It is a type of network in which computer

connect with each other within the premises of a building, school, office etc. LAN can connects computer within a small area. It is secure network Data transmission is very fast in LAN.

MAN :

MAN stands for Metropolitan Area Network. It is used to connect computer within cities. It is mostly used to connect differ computers placed in different cities. Such as Banks, campuses of Schools, colleges or offices etc.

WAN : It stands for Wide Area Network. Anyone can communicate with other device connecting to WAN, anywhere in the world. Data transfer speed is very low.

PAN :

PAN stands for Private Area Network. PAN is a personal network by which people cane transfer or receivee data such as bluetooth.

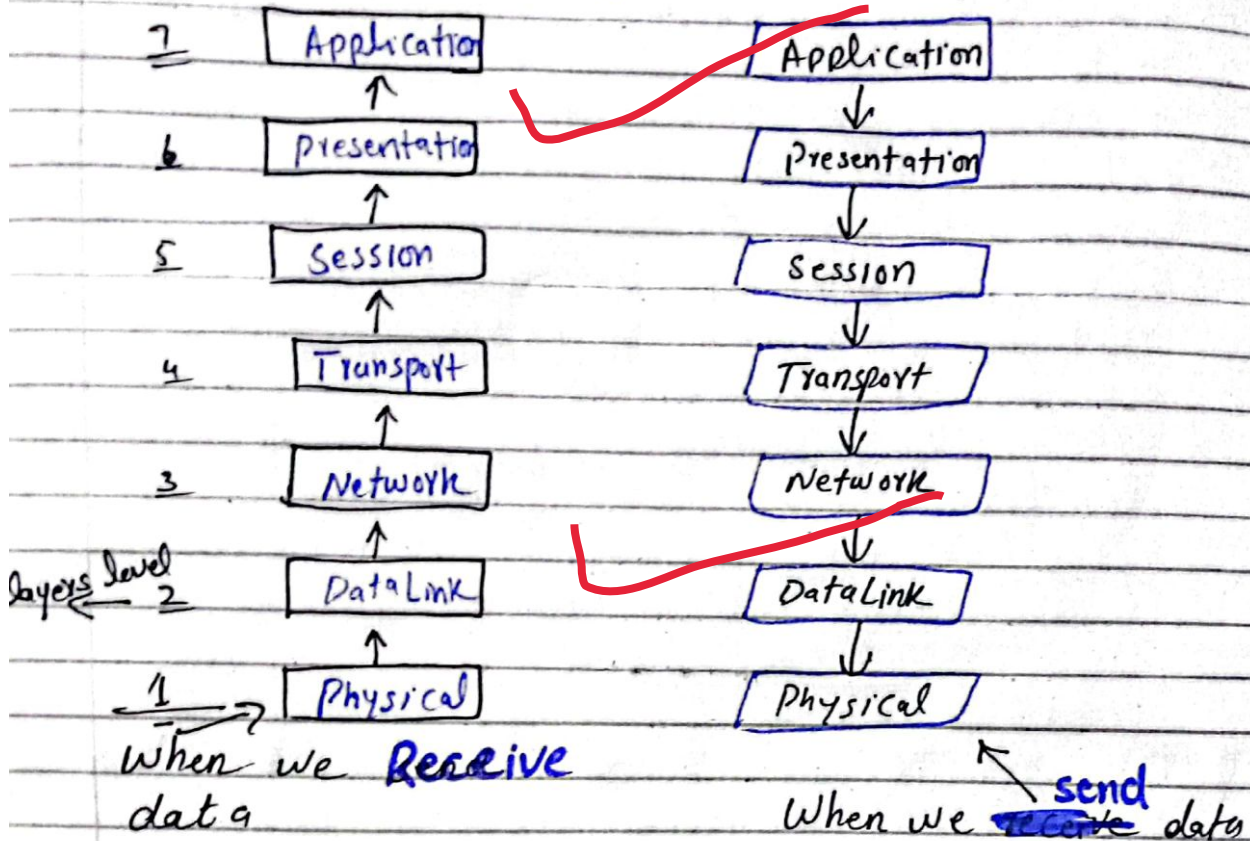**Q.4** What is OSI & describe its layers.

OSI :

OSI stands for Open System Inter connection. It is a reference model which is used to understand how the computer system works. It is divided into Seven layers. Each layer performs specific tasks and function.

Layers of OSI :

Seven layers of OSI model are as follows :

① Physical layer ② Data link layer
③ Network layer ④ Transport layer
⑤ Session layer ⑥ Presentation layer
⑦ Application layer.

| | | | |
|---|---|---|---|
| 7 | Application | → | Application |
| 6 | Presentation | | Presentation |
| 5 | Session | | Session |
| 4 | Transport | | Transport |
| 3 | Network | | Network |
| 2 | DataLink | | DataLink |
| 1 | Physical | | Physical |

Layers level ← 2

When we **Receive** data

When we ~~receive~~ **send** data

## OSI Model.

1  Physical layer: It is first layer of OSI model. It converts data into 0,1 form and then transmit it onto physical medium.

2  Data link layer: This layer receives data from Network layer, arranged into special format & transmit it to physical layer.

3  Network Layer:
Network layer receives data from transport layer and attach necessary

information such as IP protocols and transfer it to Data link layer.

4. Transport layer :
This layer receives data from session layer and ensures that data is in correct form. Error correction & Detection is done in this layer.

5. Session layer :
Session layer receives data from presentation layer and ensures that data is transmitted synchronously.

6. Presentation layer :
This layer receives data from Application layer & arrange it into special format & send it to next session layer.

7. Application layer :
This layer which is visible to user. This layer arranges data so that user can see and understand the data.

Q. Write a short notes on
   (i) Fiber Optics   (ii) GPS

Ans.

Fiber Optics : Fiber optics is a field of science in which we study how light carries signals and data from one place to anoter. For this purpose we fiber optic cable to transmit data. Fiber optic cable consist of thin strands made of glass and plastic. which are covered by a plastic or glass which protect it from escapping of light or interference of

electrical signals. Fiber optic uses source of light to transfer of data. Light within the Fiber optical cable travels using the principle of internal Reflection. Fiber optical can transmit huge amount of data. It is most widely used technology.

Explain each of these layers.

Strands

plastic cotting

plastic Jacket

# GPS:
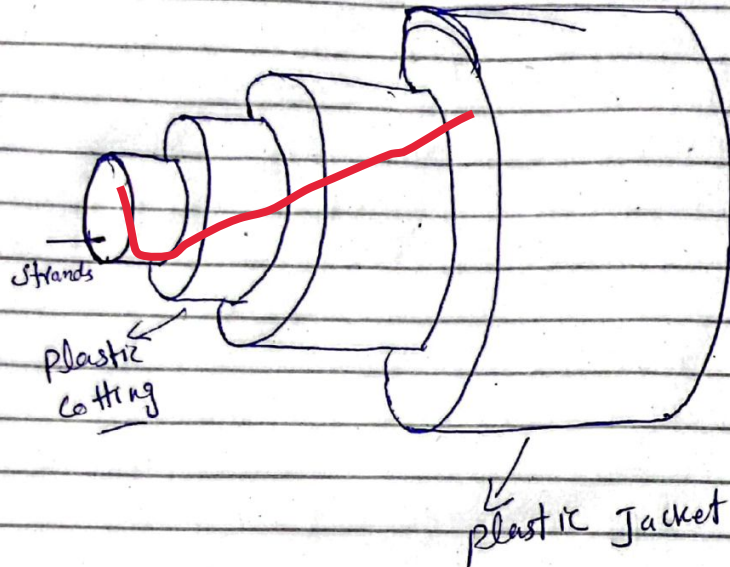
GPS stands for Global Positioning System. This technology is used to find location on the earth. GPS provide the information of location within the precision of 100 meter. It consist of satellite, receiving device and control station. It is controlled and maintained by US Air force. China and Russia have also sent its satellite into space. GPS is used for different purpose such as security, business or for invedi. Individual benefit.

S3    S2    S1

Down
123
434
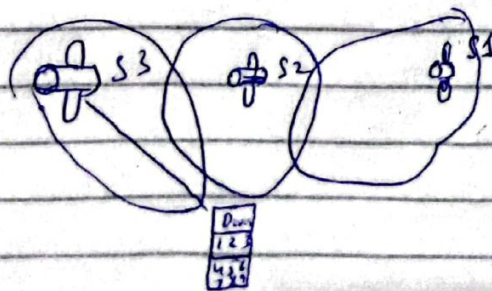
Receiving device collect information frome more than 2 satellites and then determine its precise location.

**Q2** How an Optical Fiber Fiber is constructed? How is it useful in transmitting the electro magnetic eradiations.

Optical Fiber consist of four parts Core, cladding, buffer and jacket. Core is the main part through which light passes & and data is transmitted in the form of light. Core consist of strands which are made of plastic or glass. It is covered by cladding which is made up of plastic or glass. Cladding is also covered by a plastic buffer which protect it from electromagnetic radiation. Buffer is also covered by plastic jacket which protect Fiber optic from the damage of external environment.

Core
Cladding
Buffer
Jacket
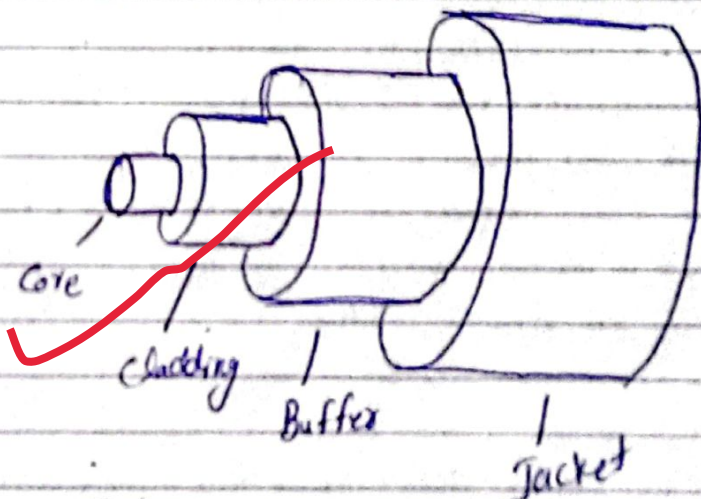
Fiber optic cable

How Fiber Optic is useful:
Fiber optic is very useful in transmitting the electromagnetic radiation because it will

be affected by external electromagentic interference. Fiber optics transmit data with less loss of signal. electron Fiber optics also protect data from external interference and breaching the security of data.

Where & How the optical Fiber is used, also write its advantages & disadvantages.

Optical Fil

Where and How Optical Fiber used.

Optical Fiber is used for different purposes and used in different organization. For example, Optical Fiber can be used by organizations and countries to transfer sensitive and huge bulk of data. Optical Fiber can also used by organization such as Television, telecome and other like industries. It can also be used in medical Field. For example in medical Field, doctors use optical fiber to visualize the inner structure of human without any surgery.

Advantages of Optical Fiber:

1 Telecome industries use fiber optics to transfer huge amount of data.

2 Fiber optics provide greater bandwidth.

3 Fiber optics cable transmit data with the speed of light.

4 Fiber optics prevent the loss of data and signals.

5 Fiber optics make it sure that data is secured.

Disadvantages of Optical Fiber.

1 It is very costly to install optical Fiber because it requires expert and

Professional works.

2. It is made of plastic or glass so it also need a little bit protection.

3. We need more than one sources to transmit lights at large distances.
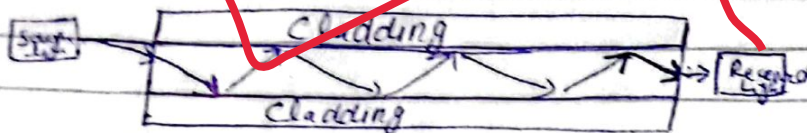


How data is passed from fiber optics

**Q** What is GPS and How it work.

GPS:

GPS stands for Global Positioning System. It is used to determine precise location on earth. GPS is used for several purposes such as finding routes, military purposes, business purposes etc. GPS is being used in daily life task.

How GPS works.

There are many satellites who are in the space, GPS is a complete system, when a user device wants to determine its exact ~~communicati~~ location, its that information is used by three satellites. Then these three satellites provides exact information about the location of device. There is also a system on the earth such as U.S which control and supervise these satellites so that GPS works efficiently.