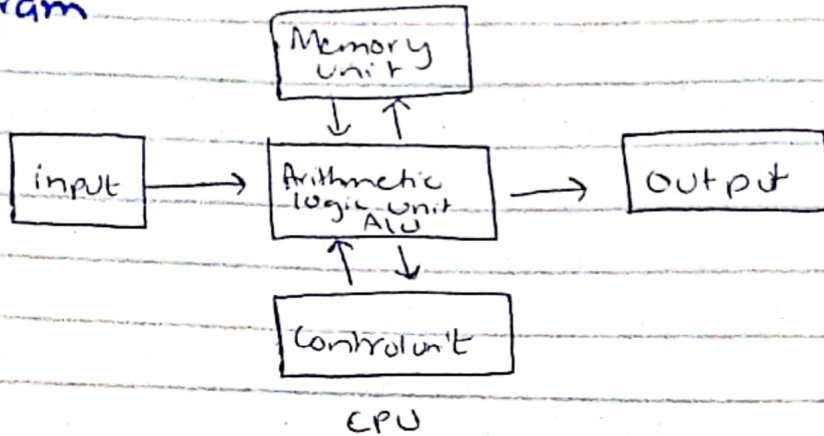


## Sec I

Q No 5 @ Draw a block diagram of input and output devices of Computer  
Diagram



Define Optics. How does an optic fibre work.

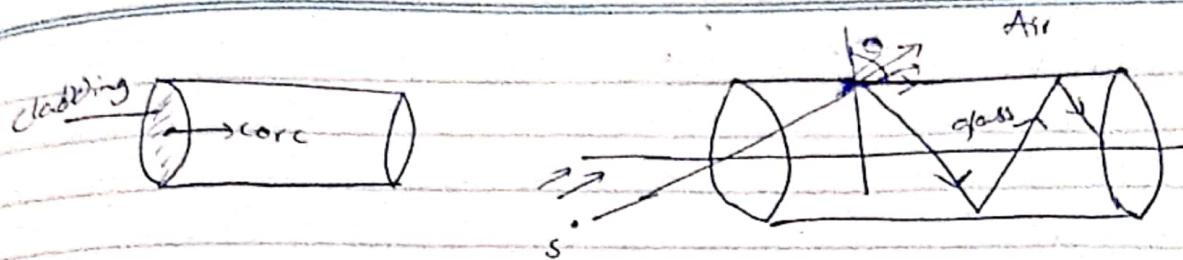
### OPTICS:

It is the study of properties of light and its propagation is called Optics.

The strands of glass used to transmit light signal from one point to another point in ~~com~~ telecommunication is called optical fibre.

### Working of optical fibre

It works on the principle of total internal reflection.



Light travels down a fibre optic cable by bouncing off the wall of cable repeatedly. Each light particle bounces down the pipe with continued internal mirror like reflection. The light travel down the core of the cable. The core is the middle of the cable and the glass structure, and the cladding surrounds the core. It has low density and low refractive index. Cladding is there to keep the light signals inside the core.

⇒ Discuss different methods of solid waste management.

### Solid waste management system

Solid waste management is a supervised handling of waste from its generation points through the recovery process up to the disposal.

### Methods

Different methods of solid waste management  
 Land filling This is the most common method of waste disposal. Solid waste is collected and dumped into designated area is called landfill.

## 2. Incineration

Solid waste is burned at high temperature reducing its volume and converting into ash.

## 3. Recycling

Materials such as paper, glass, metal, plastics are collected, processed and transformed into new products.

## 4. Composting

Organic waste ~~is~~ ~~not~~ is decomposed by microorganism to produce compost, nutrient rich soil conditioner.

## (d) Distinguish GPS and GIS

### **GPS** (Global Positioning System)

It is a satellite based navigation system that allows users to determine their precise location anywhere on earth. It provides real time location data.

GPS ~~is~~ relies on the network of satellites orbiting the Earth.

### **GIS** (Geographic Information System)

It is a system designed to capture, store, analyze, manage and present spatial or geographic data.

It produces maps and visualization that can display complex patterns.

Q No 4 (a) Define the following

Pesticide

Pesticides are chemical substances or biological agents used to control, repel or kill pests. Pests can include insects, rodents, weeds, fungi etc.

Herbicides

Herbicides are a type of pesticide specifically designed to control or eliminate unwanted plants commonly referred to as weeds.

Insecticides

Insecticides are pesticides used to kill or control insects.

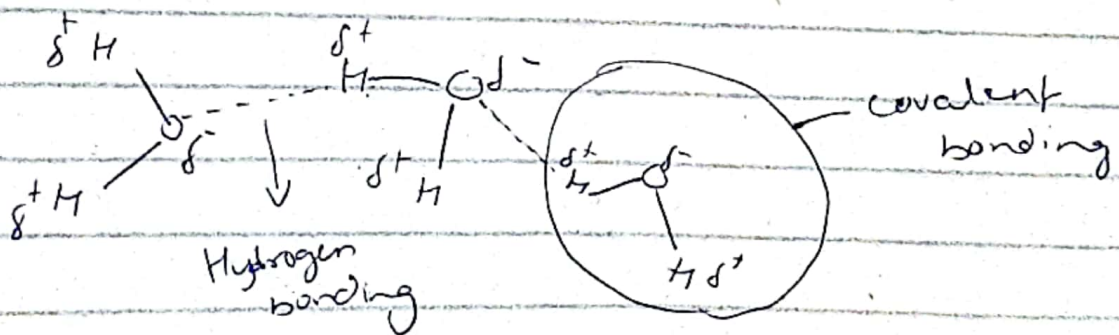
Greenhouse effect

The greenhouse effect is a natural process that warms the Earth's surface.

Ceramics

Ceramics refer to a class of non-metallic inorganic materials that are typically produced by heating and cooling natural clay or other minerals.

b) Explain the bonding in water molecule



The water molecule is known for its unique bonding properties.

① - Covalent bond

water is composed of two hydrogen atom and one oxygen atom. Each electron of hydrogen atom share one of its electron with oxygen atom forming two single covalent bond.

② Hydrogen bond:

Oxygen is more electronegative than hydrogen meaning it has a higher tendency to attract electron. This result in partial negative charge on the oxygen atom and partial positive charge on hydrogen atom.

## Sec II

QNO8 (a) If in a certain language, BROTHER is written as QDGSNQA, then in the same language, SISTER would be written as \_\_\_\_\_

BROTHER  
QDGSNQA

SISTER  
QDSRHR

A B C D E F G  
H I J K L M N  
O P Q R S T U  
V W X Y Z

SISTER would be written as QDSRHR

(b) A card is drawn at random from a pack of 52 cards. Find the probability of getting a number less than 13.

$$\text{Probability}(E) = \frac{\text{No of ways of occurrence of event}}{\text{Total possible outcome}}$$

(1) Probability of drawing (8) =  $\frac{1}{12}$

(ii) an even number =  $\frac{6}{12} = \frac{1}{2}$

~~1, 2, 3, 5~~  
2, 4, 6, 8, 10, 12

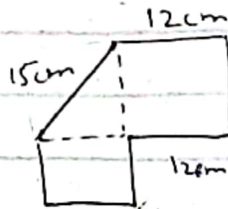
Probability of even number =  $\frac{1}{2}$

iii) Perfect square =  $\frac{1}{12}$   $(9)^2$

iv) a negative number = 0

v) a number less than 13 =  $\frac{12}{12} = \boxed{1}$

c) calculate the total area and perimeter of the given shape



d) 15, 15, 16, 16, 16, 17, 17, 18, 19

$$\text{mean} = \frac{\text{Sum of all}}{\text{Total}}$$

$$= \frac{15+15+16+16+16+17+17+18+19}{9}$$

$$= \frac{119}{9}$$

$$\text{mean} = \boxed{13.2}$$

$$\begin{array}{r} 13.2 \\ 9 \overline{) 119} \\ \underline{29} \\ 27 \\ \underline{20} \\ 18 \\ \underline{18} \\ 0 \end{array}$$

$$\begin{array}{r} 16 \\ 16 \\ \underline{32} \\ 16 \\ \underline{48} \\ 12 \\ 165 \\ \underline{17} \\ 182 \\ \underline{18} \\ 100 \\ \underline{18} \\ 119 \end{array}$$

$$\text{median} = 15, 15, 16, 16, \boxed{16}, 17, 17, 18, 19$$

$$\text{media} = \boxed{16}$$

mode most repeated value

$$\text{mode} = \boxed{16}$$

Range

$$\begin{aligned} \text{Range} &= \text{Highest} - \text{lowest} \\ &= 19 - 15 \\ \text{Range} &= 4 \end{aligned}$$

Q7

Q A concert hall 400 seats of which 325 are occupied. Express the attendance at a percent of capacity.

$$\begin{aligned} \text{Total seats} &= 400 \\ \text{occupied} &= 325 \end{aligned}$$

$$\text{percent} = \frac{325}{400} \times 100$$

$$= \frac{13}{16}$$

$$= 0.8125$$

$$= \frac{0.8125 \times 100}{10000}$$

$$= 81.25\%$$

$$\begin{array}{r} 0.8125 \\ 16 \overline{) 130} \\ \underline{128} \\ 20 \\ \underline{16} \\ 40 \\ \underline{32} \\ 80 \\ \underline{80} \\ 0 \end{array}$$



