

Section-I

Q.5 a) Draw a block diagram of Input and output devices of Computer?

→ Input devices Output devices

Input devices are those devices which take give command to the computer.

Output devices are those devices which take commands of the input devices and perform accordingly.

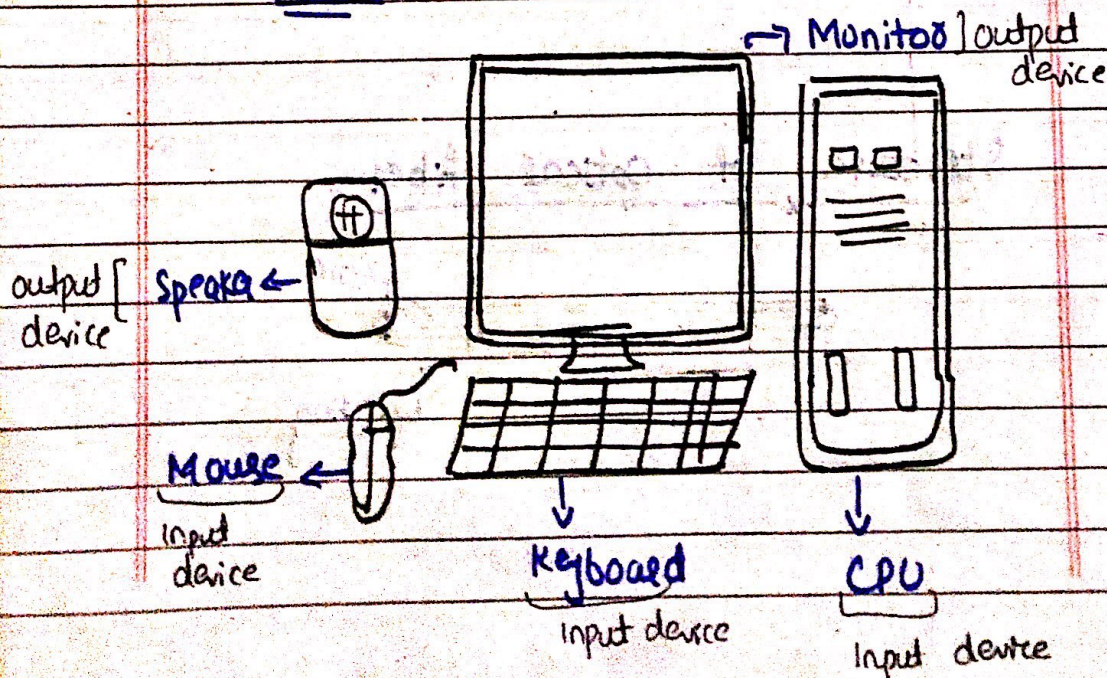
Examples:

- (a) Mouse
- (b) Keyboard
- (c) CPU (central Processing Unit)

Examples:

- (a) Monitor
- (b) Speaker
- (c) Printer

→ Block Diagram of Input and Output Devices:



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(b) Fiber Optics?

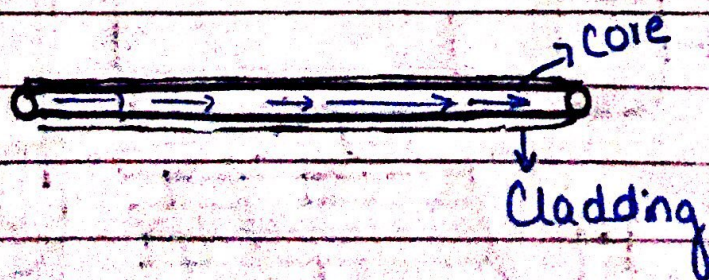
→ Optics:

Optics is a branch of Physics which deals with fiber optics. Fiber optics are thin stranded of pipe, having thickness like hair, and carry digital information from one place to another with minimal losses.

* Thickness of Optical fiber

Optical fibers are 0.1mm thick.

→ Structure of Optical fiber

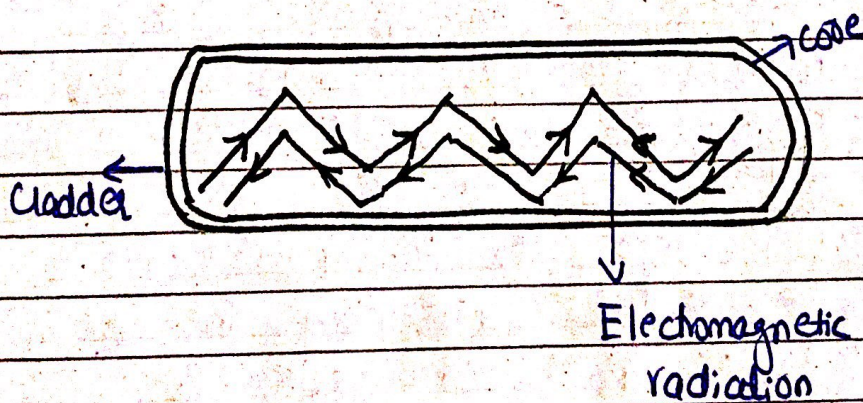


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→ Working of Optical fibers:

Optical fibers work via phenomena of total internal reflection. The electromagnetic radiations are internally reflecting and bouncing back within optical fiber.

It consists of two layers. The outermost part is called cladder while inner part is called core. Cladder do not let electromagnetic radiations out from optical fibers.



(c) Different Methods of Solid Waste Management?

→ Solid Waste Management:

Solid Waste Management is the

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is the process of dumping off waste from industries, houses, hospitals and nuclear power plants to reduce their deleterious effects.

Solid waste management includes different methods:

- (a) Landfills
- (b) Pyrolysis
- (c) Incineration
- (d) Composting

— Landfills:

The landfills method to dispose off solid waste management is mostly used method. In this method, a large and open hole is made to dump all the solid waste into it. In most cases, the landfills are open. The further reduction of solid waste is done by putting the dump on fire inside the landfill.

— Pyrolysis:

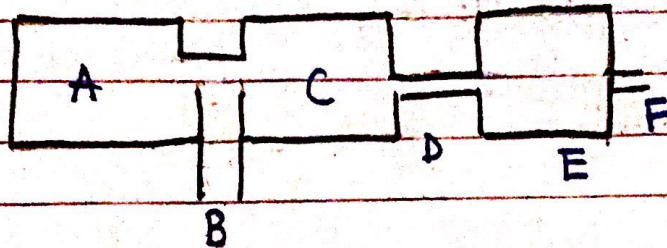
Pyrolysis is reduction of solid wastes at high temperature without the oxygen. The solid wastes dumped

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into pyrolytic chamber. The chamber sets at high temperature of around 1500°C . In a pyrolytic method, every type of solid waste can be reduced.

— Incineration:

Incineration method involves reduction of solid waste into different chambers with different temperatures.



(a) Chamber A

It has temperature range of 750°C to 950°C . The solid waste burnt here.

(b) Chamber B

The gas remaining of Chamber expelled from Pipe B.

(c) Chamber C

The temperature in Chamber C is 950°C to 1100°C . The organic waste reduced here.

(d) Chamber D

The remains of Chamber

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C moves via pipe D and expelled out from pipe F.

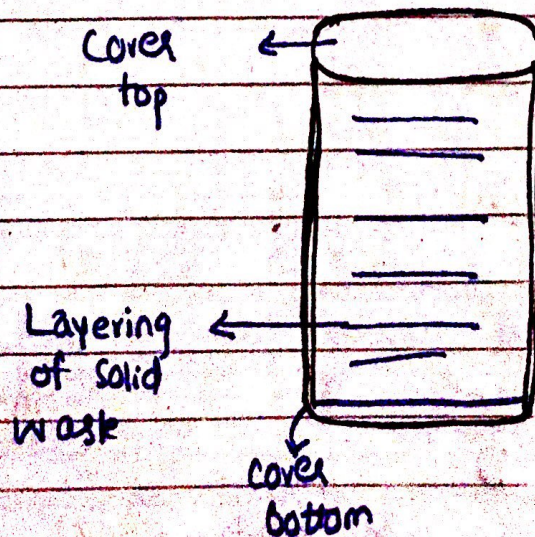
(e) Chamber E

In chamber E, temperature is above 1100°C . The remains of all chamber are burnt here except paper, pulp, and plastic.

→ Composting:

Composting involves dumping off solid wastes into landfill with cover pit bottom and after cover.

In composting, wastes are compressed in layer to reduce its size. After layering, dump into landfill.



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(d) Distinguish GPS and GIS.

→ GPS:

GPS stands for global positioning system.

The global positioning system is launching of satellites into the space from earth. The centripetal force is maintaining satellite to move into space.

When gravitational pull of earth and centripetal force balance each other, the satellite moves in the orbit with the earth. GPS moves from west to east in southern pole and east to west in northern pole.

GPS finds its applications in;

- * Communication
- * Military surveillance
- * Weather forecasts

→ GIS:

GIS is use to find out distances of objects and environmental issues.



Q.4 (d) Advantages and disadvantages of AI.

→ Artificial Intelligence:

Artificial intelligence can be defined as the simulation of human intelligence by computers. It is brain child of humans.

→ Advantages of AI:

Following are the advantages of artificial intelligence.

(i) Advantages in Agricultural Sector:

Artificial intelligence finds its application in agricultural sector. The monitoring of fields, estimation of crops, selection of seeds and driverless tractors to plough the fields. Also, fertilizers

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Suitable for selective Qand P's
application of ~~agent~~ artificial
intelligence.

(ii) Advantages in Education Sector:-

Artificial intelligence has number of applications in education sector. The introduction of Chat GPT help students and teachers in academic learning. Also, the learning is easy now as student can consult AI to learn customize skills.

(iii) Advantages in Medical Sector:-

Artificial intelligence boosts the medical sector by early diagnosis of life threatening diseases, by prescribing medicines to patients and by providing medical history of patients. In this way, medical sector has taking fruits of Artificial Intelligence.

(iv) Advantages in Space Technology:-

Artificial intelligence is now conquering the space technology too. Most of the developed countries are considering sending robots into space for collecting required information.

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(v) Advantages in Crime Control:-

Artificial intelligence helps in detection of criminals. The forensic and matching of fingerprints are aiding in crime control.

→ Disadvantages of AI:

Following are the disadvantages of AI.

(i) Automation of Weapons:-

Artificial intelligence increases the risk of automation of weapons.

(ii) Replacement of Human Jobs:-

With the advent of artificial intelligence, human jobs are replacing with machines.

(iii) Privacy Invasion:-

The cyber bullying and deep fake videos pose threat to humans. The privacy invasion and threatening of breaching privacy has raised the concerns.

(iv) Ethical concerns:-

AI is emotionless. It does not.

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(v) Case about emotions of humans.
Plagiarism and data theft:-

AI provide access to students to copy data for their academic writings without thinking of their own selves.

It leads to lack of critical thinking among students. Also, AI copy data without the consent of authors.



(b) Explain the bonding in Water molecule:

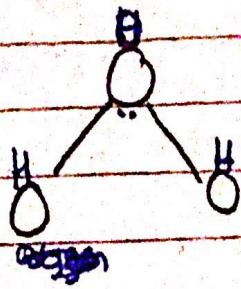
Water molecule consists of one Hydrogen and two oxygen atoms. They are bonded through Hydrogen bonding.

→ Hydrogen Bonding:

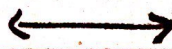
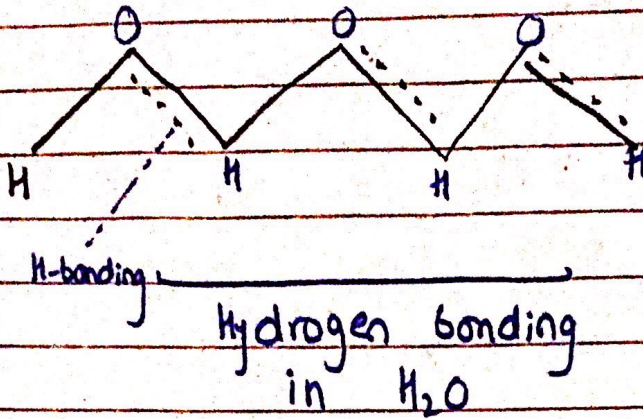
The force of attraction present between atom of hydrogen and the most electronegative atoms like Oxygen, Nitrogen, Carbon etc is called Hydrogen bonding.

Water molecules are bonded through hydrogen bonding.

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Water molecule



(a) Define the following?

(i) Pesticides:

Pesticides are the compounds which control the production of pests.

Pests include worms, mice, rats, birds which are harmful for crops.

Pesticides may be degradable and non-degradable.

(ii) Ceramics:

Ceramics are three dimensional, inorganic minerals

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Which are brittle and hard and used in making of pottery and utensils.

Ceramics can be orderly arranged or non-orderly arranged.

(ii)

Insecticides:

Insecticides are type of pesticide which kill insects in crops.

They specifically target insects.

(iv)

Herbicides:

Herbicides are type of pesticide which kill herbivores.

(v)

Green House Effect:

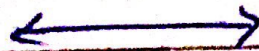
Green House effect can be defined as the trapping of ~~carbon~~ UV-rays and carbon dioxide (CO_2) into the earth and resultantly increase in the rise of temperature of the earth.

The Ultraviolet radiations are coming from the atmosphere. Due to ozone depletion, they are not stopping these and increase the temperature of earth.

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(c) Types of Waves?

→	RADAR	Radio waves
→	SONAR	Electromagnetic waves
→	Mobil Phones	Electromagnetic waves
→	Thermistors	Micro waves
→	LIDAR	Electromagnetic waves



Section II

Q.6 (d)

Solution:

Two numbers are in ratio = 3:2

Suppose numbers are = 6 & 4

$$6 : 4$$

$$3 : 2$$

If 2 is added to 6, it

$$\text{becomes} = 2 + 6 = 8$$

$$\text{and } 6 \text{ is added to } 4 \Rightarrow 6 + 4 = 10$$

Now, we have;

$$\Rightarrow 8 : 10$$

$$\Rightarrow 4 : 5$$

The numbers are 6 and 4 initially
and after 8 and 10.

Answer: 8 & 10



(a) Solution: ..

A farmer cuts a 300ft fence
into two pieces.

The longer piece's length = 260ft

The shorter piece's length = 40ft



(c) Solution:

\Rightarrow ~~Ratio~~ Percentage of won matches = 60%

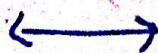
\Rightarrow Lost matches = 24

\Rightarrow Total number of matches = ?

\Rightarrow Percentage of lost matches = $\frac{24}{60} \times 100$

= 40%

\Rightarrow So, Total number of matches = 100



Date: _____

Q. 8 a)

Solution: ~~Broth~~

BROTHER \rightarrow COJCSNCOA

SISTER \rightarrow ~~HUKSRA~~
 \rightarrow HUKSRA

(b)

Probability? \longleftrightarrow

Solution:

(i)

8

$\frac{1}{12}$

only one card contain
8 among 12 cards.

(ii) An Even number

\Rightarrow

$\frac{6}{12}$

\Rightarrow ~~6~~ even number can be
2, 4, 6, 8, 10, 12

(iii) a perfect square

$\frac{2}{12}$

(iv)

a negative number

$\frac{0}{12}$

\Rightarrow no probability of negative number

(v)

a number less than 13

$\frac{12}{12}$

\longleftrightarrow

Date: _____

(d) Mean, Mode, Range, Medium?

→ Mean:

The average of total number by adding them and then dividing by their total number.

→ Mode:

The repeated value in set of numbers is called mode.

→ Range:

The difference between the highest and shortest value.

$$R = R_1 - R_2$$

→ Medium:

The central values in a set of entities is called medium.

Given data:

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

= $\frac{149}{9}$ = 16.5

→ Mode = 16

→ Range = $19 - 15$
= 4

→ Medium = 16