

Day: _____

Q5

a)

Ans

Uses of five electromagnetic radiations are as follows:

i) Gamma Rays γ

Gamma rays are of high energy rays. These are used to remove tumours, kidney stones, in surgery.

ii) X-rays

X-rays are high energy waves but lesser than gamma rays. These are used in visualizing internal structure of body.

iii) Ultraviolet rays (UV)

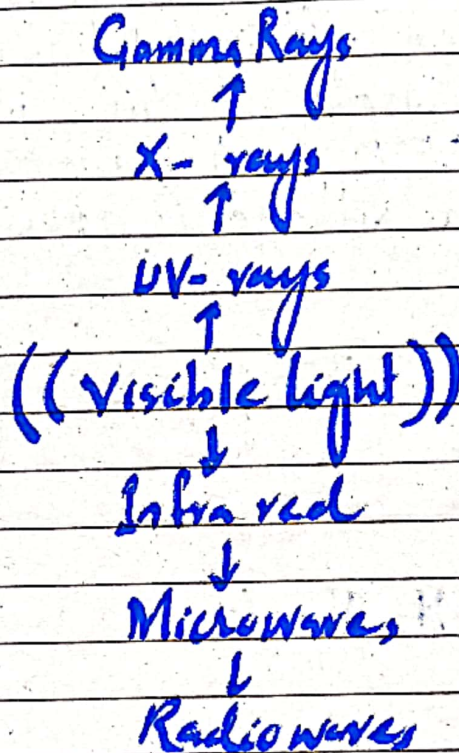
UV rays are more energy possessing rays than infrared rays. These are used to synthesize vitamin D in human skin with the help of sunlight.

iv) Microwaves

Microwaves are lesser energy possessing waves than ultraviolet rays. These are used in microwave oven and in mobile phones.

v) Radiowaves

Radio waves are least energy possessing waves. These are used in radar, TV, satellites etc.

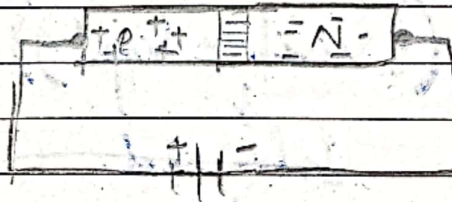


• Spectrum of EMR

5b)
Ans:

Light Emitting Diode (LED)

Another name of light emitting diode (LED) is P-N Junction. It is a semiconductor. LED is energy efficient lighting technology. The job of LED is to emit light when voltage is applied.



• P-N Junction

5c)
Answer

Ceramics

Ceramics are those materials that are neither metallic nor organic.

These are non-reducible and can be formed by using heat.

For example: earthenware, stoneware, and porcelain.

Semi-conductors

Semi-conductors are electrical materials that possess properties between conductors and insulators.
 For example: Silicon and germanium

Types of Semiconductors

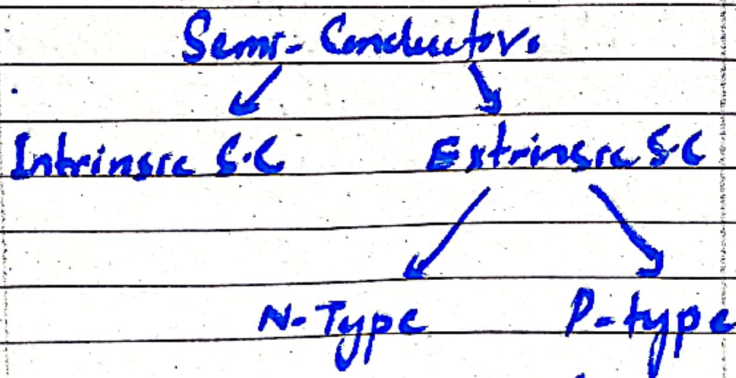
There are two types of semi-conductors:

a) **Intrinsic semiconductors**

A semi-conductor that is in its pure form.
 e.g. Silicon and Germanium

b) **Extrinsic semiconductors**

A semi-conductor contains impurity within it.
 e.g. N-type and p-type semi-conductors



Diagrammatically form

5d)
Answer

Polio

Polio myelitis or Polio virus occurs in childhood. It is in all parts of the world.

a) Symptoms

- i) Muscle pain and stiffness
- ii) Headache and sore throat
- iii) fever, fatigue, and vomiting

b) Causes

Stool, contaminated food and water, or may be saliva

c) Preventions and vaccines

Polio can be prevented by vaccines:

i) Inactivated polio virus vaccine (IPV)

At the age of two to eighteen months.

ii) Oral Polio vaccine (OPV)

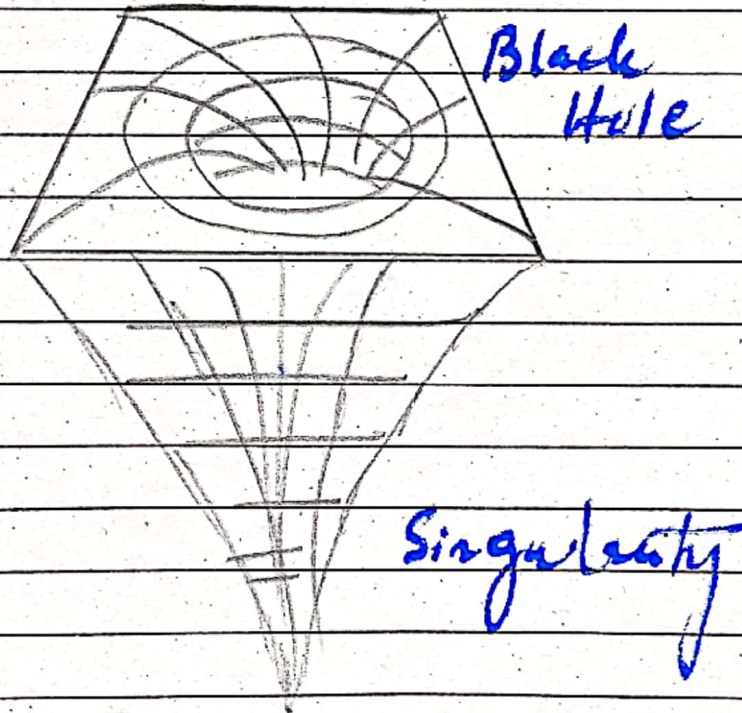
At the age of four to six years age.

Q3 a
Answer

Formation of Black Hole

Black hole is a massive dense object that attracts objects towards itself.

When inside of a 'Black Hole' energy is increased, it creates imbalance. Resultantly, stars collapse inside it. Hence, black hole is formed.



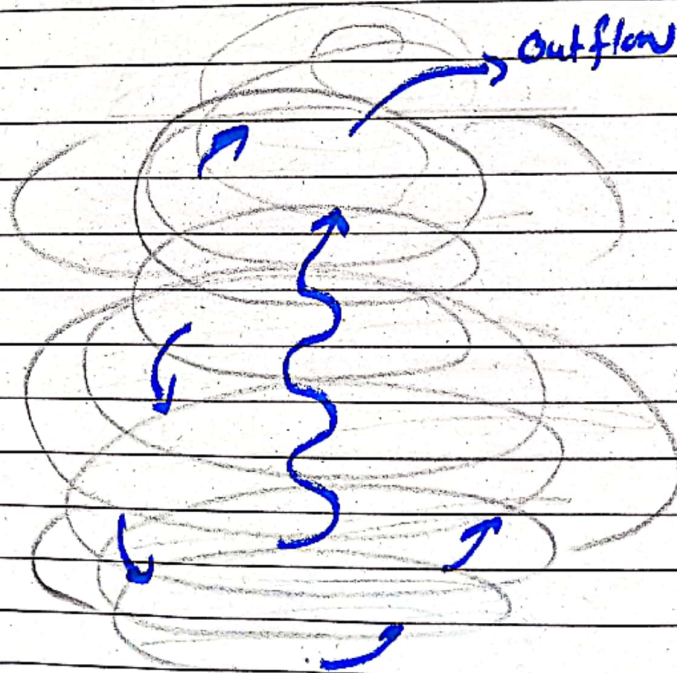
• Black Hole

3b)
Answer

Formations of Cyclone

A cyclone is formed when the warm, moist air moves upward over the ocean or sea.

When air moves upward, pressure become low at downward. This low pressure air filled with high pressure air surrounding it and so on it moves upward therefore, cyclone is formed.



• Cyclone formation

3c)
Answer

Common causes of floods

Some common causes of floods are as follows:

a) Rising Heatwaves

Heatwaves are increasing day by day that regularly bring floods.

For example: In 2022, the temperature reached at 51°C in Jacobabad, Sindh. The year 2022 was the worst affected by heatwaves that brought floods across Pakistan.

b) Deforestation

Another cause of floods is deforestation. Continuous deforesting leads imbalance to the soil and results floods -

c) Rise in global warming

Global warming is the world's serious problem. It is responsible to bring

Floods.

For example - The rise in global temperature is 1.5°C . (World Bank report, 2023) - Resultantly, Pakistan and Somalia are affected by floods.

d)

Increase in population

Population needs increase day by day. To full the needs of people, natural phenomenon is disturbed. Hence, increase in population is also a cause of floods.

Water. It is made
up of plasma and
moves outward.

Page No.

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Q7

a)
Ans.

Average of seven consecutive numbers is:

$$x + x + 1 + x + 2 + x + 3 + x + 4 + x + 5 + x + 6 = 20$$

$$7x + 21 = 20$$

$$7x = -1$$

$$x = -\frac{1}{7}$$

the largest number is:

$$x + 6$$

$$= -\frac{1}{7} + 6$$

$$= \frac{-1 + 42}{7}$$

$$= \frac{41}{7} \text{ Ans.}$$

7b)

Ans

C is A's father's nephew;
 \therefore C is A's cousin

D is A's cousin, but
not a brother of C.

\therefore D and C are not
brothers

as, D and C both are A's

cousins, but are not
brothers.
Hence, C and D are
also cousins.

\therefore A, B, and D are cousins.

7c)
Ans:

Missing Numbers

7, 12, 19, 28, 39

Sol:

$$12 - 7 = 5$$

$$19 - 12 = 7$$

$$28 - 19 = 9$$

$$39 - 28 = 11$$

as 5, 7, 9, 11 are odd
numbers

$$40 - 39 + 13 = 52$$

\therefore 52 is the missing
number.

7d)
Ans:

According to the formula

$$\text{Ratio of A} = \frac{\text{Total Amount} \times A}{\text{Sum of ratios}}$$

and so, of B, C, D

As sum of ratio is
 $5 + 2 + 4 + 3 = 14$

Hence

$$A = \frac{n}{14} \times 3$$

$$B = \frac{n}{14} \times 2$$

$$C = \frac{n}{14} \times 4$$

$$D = \frac{n}{14} \times 3$$

Now - C is 1000 sheets more than D.

$$C = \frac{n}{14} \times 4$$

$$1000 + D = \frac{n}{14} \times 4$$

$$14000 + D = n \times 4$$

$$n = \frac{14000 + D}{4}$$

$$n = 3500 + D$$

$$C = 3500$$

$$D = \text{will be } 2500$$

\therefore B will be 1500 as

$$C = 4, D = 3 \text{ and } B = 2 \text{ (as per ratio)}$$

Q6

a)

Ans

10% decrease in value

$$\therefore 100 - 10 = 90$$

present value is 8748

$$\therefore \frac{4748}{90} = 97.2$$

3 years ago 97.2×3

$$= 291.6 \text{ Ans.}$$

6b)

Ans

present age of father $4x$
 present age of daughter x

In 5 years =

$$\text{Age of father} = 4x + 5$$

and

$$\text{daughter's} = x + 5$$

Father will be thrice of daughter's
 age =

$$4x + 5 = 3(x + 5)$$

$$4x + 5 = 3x + 15$$

$$4x - 3x = 15 - 5$$

$$x = 10$$

Daughter = 10 years old

Father is $4 \times 10 = 40$ years old

4 times

Ans.

6c

Volume of a football

$$\text{Formula } \frac{4}{3} \pi r^3$$

$$D = 12 \text{ cm}$$

$$\therefore r = \frac{D}{2} = \frac{12}{2} = 6 \text{ cm}$$

putting value in a formula:-

$$= \frac{4}{3} \times \pi \times (6)^3$$

$$= \frac{4}{3} \times 216 \times \pi$$

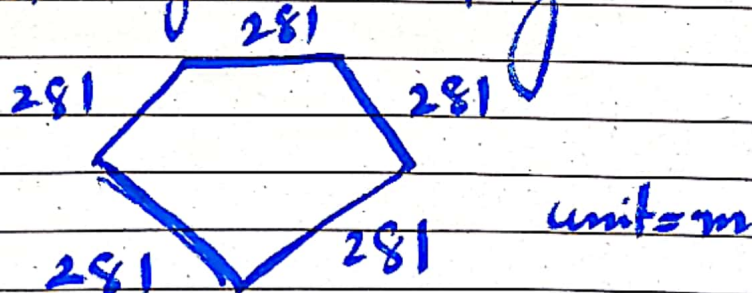
$$= \frac{4}{3} \times 2 \times 6 \times 3.14$$

$$= \frac{2712.96}{3}$$

$$= 904.32 \text{ cm}^3 \quad \text{Ans.}$$

6d)
Answer

A regular Pentagon



$$\text{Perimeter} = 5 \times b$$

$$5 \times 281$$

$$P = 1405 \text{ m Ans.}$$