

PART = II
SECTION = A

Q No 4

a) Answer:Solar System:

It is a system consist of planets, moon and dwarf planets revolving around a solar center, sun.

Explanation:

The solar system is part of Milky way Galaxy. It have a huge star, sun, in the centre, which produces energy through nuclear fission for the whole system. It consists of eight planets and their respective moon.

These planets include: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune. The Earth is only planet which can sustain life.

It also contain certain
dwarf planets like Ceres,
and Pluto. Moreover, certain
Asteroid and Meteoroids
also present in Mercury
and Jupiter belt

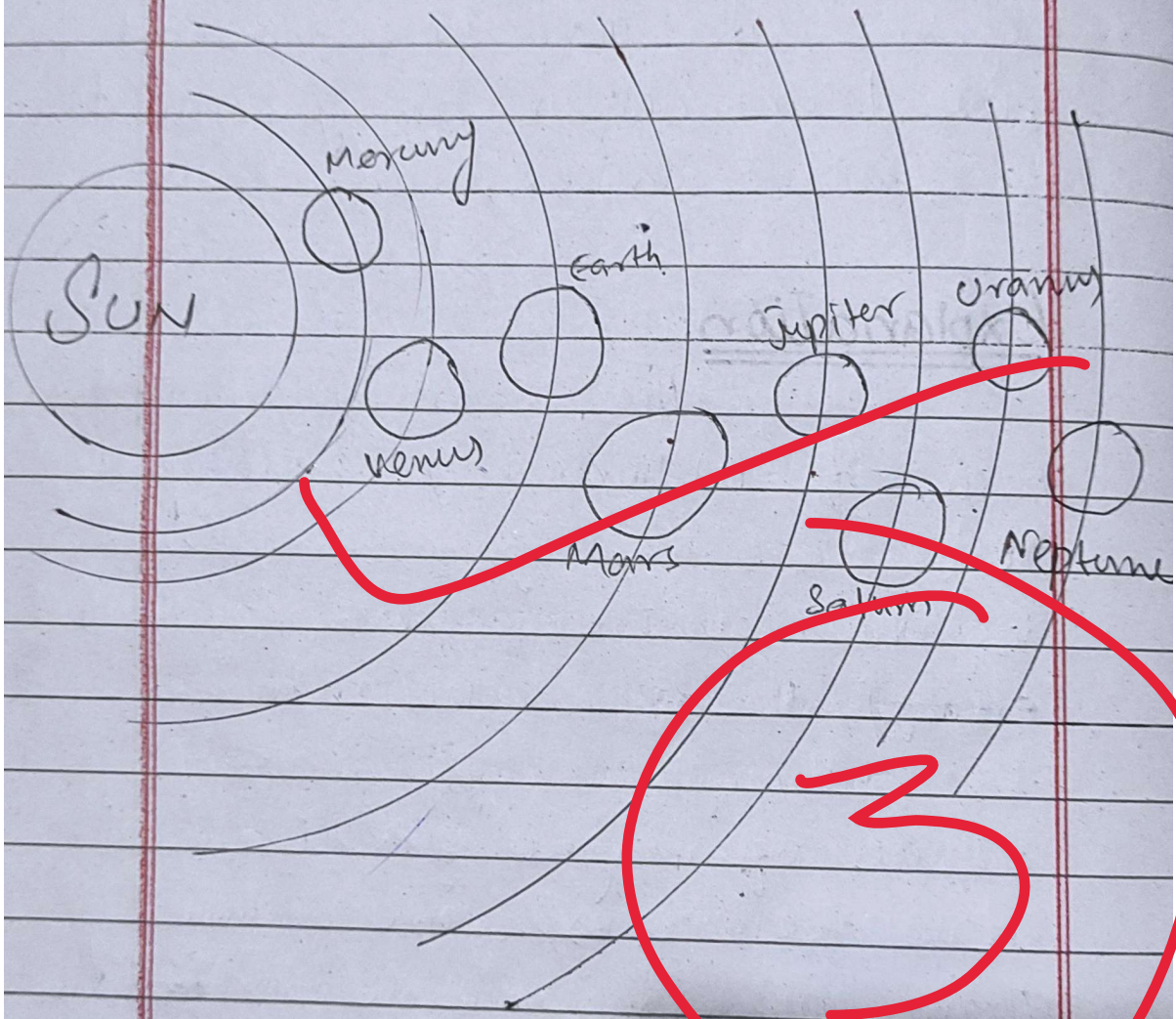


Fig: Solar System

b) Answer:

Pituitary Gland:

It is a small gland located at the base of brain and control functions of endocrine gland across human body.

Importance of Pituitary Gland:

Pituitary Gland is also known as master gland as it release a huge amount of hormone. It also release certain hormones which control function of other hormones in other part of body. These hormones are called tropic hormones.

i) Tropic hormones of Pituitary gland:

a) Thyroid Stimulating Hormones: It is release

Hormones: It is release

From Anterior lobe and control the function of Thyroid gland through negative feedback mechanism.

b) Adreno-corticotrophic hormone: (ACTH)

It is also released from Anterior portion. Control the function of Adrenal gland, around midday

c) Luteinizing Hormone (LH):

Released from Anterior portion help in process of luteinization after release of ova in female

d) Follicle-stimulating Hormone:

It help produce / stimulate follicle to mature ova and release it. In male it

help nurturing of sperm and production of Testosterone

Other important functions of Pituitary Gland:

a) Stimulating Growth:

It release growth hormone essential for proper growth of body.

b) Prolactin: It helps in milk production after giving birth.

c) Oxytocin: It helps in labour production during delivery of an infant, working through positive feedback mechanism.

d) Anti-diuretic hormone (ADH)
It help maintain normal water content in human body, by controlling process of uric acid.

Conclusion:

Being a master gland, pituitary gland plays a vital role in normal functioning of human body.

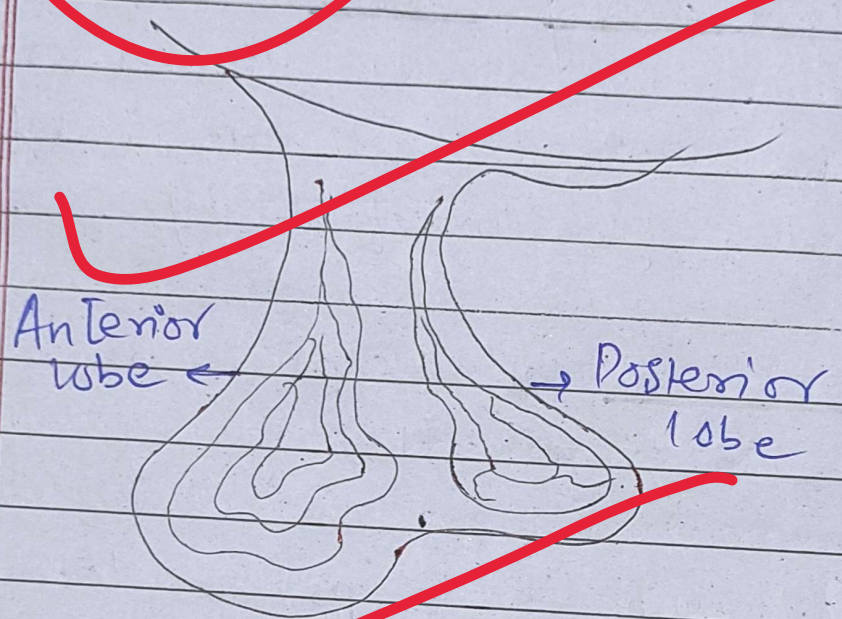


Fig: Pituitary Gland

Answers:

Difference between RAM and ROM:

RAM	RAM
It stands for Read only	It stands for random Access

memory → It is permanent storage.	memory → It is not permanent but temporary storage.
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→ Provides slow access compared to RAM.	→ Provides quick access to data.
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→ It's data is not volatile.	→ It's data is volatile.
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→ It's comparatively smaller in size.	→ It is comparatively larger in size.
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Example:

DDR4, DDR5

EPROM, PROM

Nibble:

It is smaller unit of storage, which can store upto half of a byte which means it consist of 4-digits.

USB: It is a type of Bus,

which connects portable devices to computer.

Mother-Board:

It is main, central circuit in computer devices with which all the peripheral and central devices of processing unit is connected.

d) Answer:

COP-29, held in Baku, took various measures to ensure that temperature remains under 1.5°C pre-industrial level. It took following measure to achieve it.

a) Global financing pledge:

Developing countries pledge that they will ensure finance of \$300 billion annually, \$100b more than previous \$100b pledge.

b) Loss & Damage Fund:

They committed to operationalize loss & damage fund initiated at COP-29 \$700 million were pledged to Loss & Damage Fund.

c) Biennial Transparency Report:

Countries were asked to ensure transparency in their measures taken to overcome climate crisis, they must release Biennial transparency report.

d) Operationalization of Carbon markets:

Article 6.4 is added to operationalize carbon trading market to ensure funds flow to carbon negative countries, in order to incentivize low emission.

Conclusion:

Through these measures COP-29 take a leap to limit temp rise upto 1.5°C.

Q5

a) Answer:

Sea-Surface temperature rise:

It is a phenomenon by which the surface temperature of sea rises.

This rise in temperature occurs due to difference in sun heating earth surface. The temperature in the tropic is high due to direct sunlight and temperature drop at poles due to lack of direct sun rays.

This leads to higher temperature at tropical

Role in formation of cyclone:

As we know, cyclones are formed through/due to low-pressure centre. The rising sea surface temp provides these centres. When the temp of sea surface rises the water vapours evaporate, generating a low temp pressure centre. The air from poles starts rushing toward this centre. Due to Coriolis effect, the wind took a turn generating a cyclone.

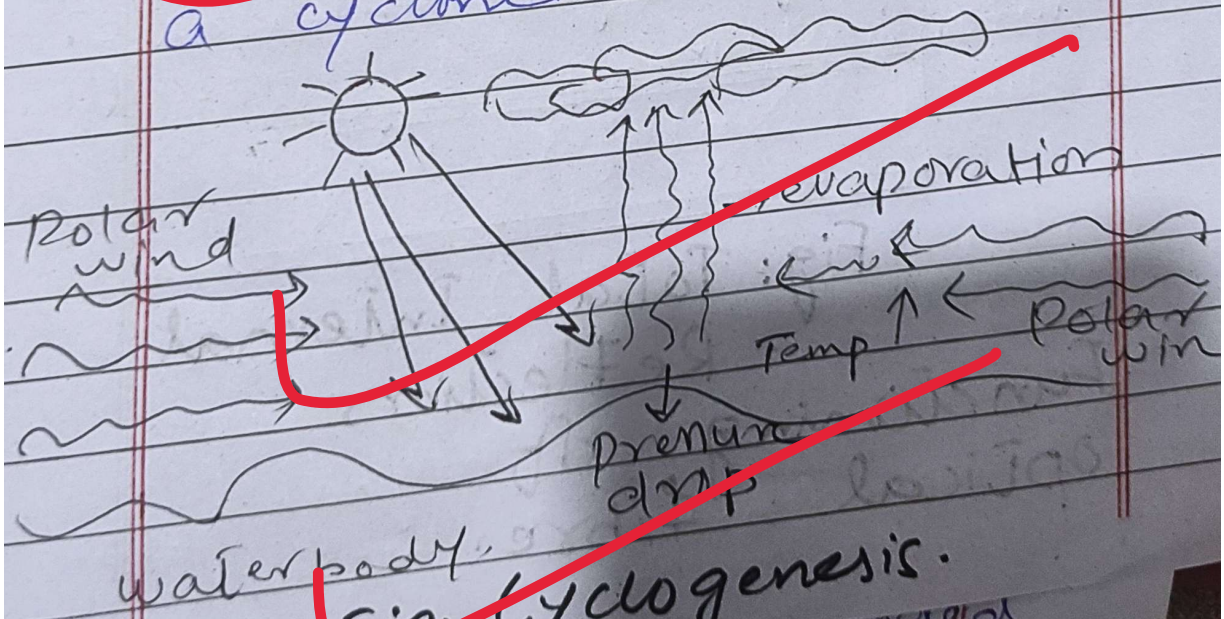


Fig. Cyclogenesis.

b) Answer:

Optical Fiber.

It's a technology through which information is send over large distance in form of light signals is called optical fiber.

Working Principle:

Optical fiber works on principle of total internal reflection. The inner glass of OF is design in such a way that it reflect light within the glass. This allow the flow of light containing information.

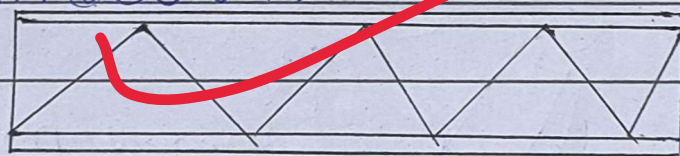


Fig: Total Internal Reflection

Functioning of optical fibre.

- 1) The data is converted to light source.
- 2) it is transmitted through optical fibre by process of total internal reflection.
- 3) Receiver devices receive light and convert it into data.

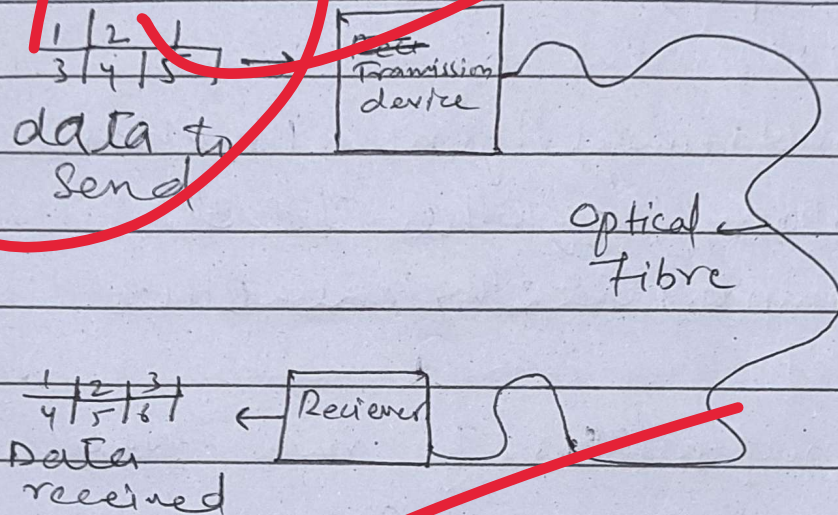


Fig: Functioning of Optical Fibre System.

d) Answer:

Food Additives:

These are various substances added

to food for preservation, colour or taste enhancing purpose.

Types of Additives:

- i) Preservative: To protect food from spoilage or decay.
example; Sulfide, nitrites.
- ii) Colouring Agents: To enhance colour of the food.
example; Methylene Blue
- iii) Emulsifiers: To mix two non mixable substance, emulsifiers are used.
- iv) Flavouring Agents: To enhance flavour of a specific food item include both natural and artificial flavouring.

Food Preservative:

These are natural or artificial chemicals added to food to change its self life by protecting it from spoilage due to bacteria.

1) Natural Preservatives:

It includes traditional use of salt, vinegar and oil to keep food away from bacterial degradation.

2) Artificial Preservative:

They are chemicals used to enhance self life.

It include sulphites and nitrites which not only avoid bacterial growth but also work as avoiding de-colouring.

c) Answer:

Different ways in which
Bacteria can help in
Production of Energy:

a) Help in decomposite
formation:

Bacterial growth
in organic waste helps
development of decomposite
which not only help reduce
waste generation but also
generative natural fertilizers
help overcome energy cost
of generating fertilizers.

b) Generation of Bio-gas:

The
bacteria present in dung
of animals help in generation
of industrial methane (CH₄).

c) Generation of Bio-fuel:
Bacteria

helps in degradation of animals and plants base fats and oil. This helps in generation of Bio-Diesel which can help overcome energy shortages.

PART # B.

Q No 6 Given data:

present value = 8748

depreciation

each year = 10%

Required:

Price 3 years before = ?

Solution:

As we know that
 current price = original price $\times (0.90)^n$

current price = 8748

So

$$8748 = (n) \times 0.729$$

$$n = \frac{8748}{0.729}$$

$$= \frac{12,000}{0.729}$$

$$= 16,461$$

$$= 22,000$$

Result:

So, Price 3 years before was 12,000.

b) **Given:**

Daughter age = x

Father age = $4x$

Required:

Father age 5 year further.

Solution:

As we know that 5 years after,

Father age = $4x + 5$

daughter age = $x + 5$

As given.

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

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

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

$$\boxed{x = 10}$$

After the year.

Present ages are

$$\text{Father age} = 4u = 4(10) = 40$$

$$\text{daughter age} = u = 10 = 10$$

Ages five years further
which means 10 years
from present age.

$$40 + 10 = \underline{50} \Rightarrow \text{Father Age}$$

$$10 + 10 = \underline{20} \Rightarrow \text{daughter Age}$$

So, 5 Year further
father Age would be
50, which is 2.5
times of his daughter

c) Given:

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

Required:

$$\text{Volume of Football} = V = ?$$

Solution:

As we know that

$$V = \frac{4}{3} \pi r^3$$

Put the values

$$V = \frac{4}{3} (3 \cdot 14) (12)^3$$

$$= \frac{4}{3} (3 \cdot 14) (1728)$$

$$= \frac{4}{3} (5928 \cdot 7)$$

$$V = \underline{\underline{2 \sqrt{7238.3}}}$$

Q not Given:

Average of 7 consecutive numbers = 20

Required:

largest no. = ?

Solution:

$$\text{Avg} = \frac{\text{Sum of no.}}{\text{Total no.}}$$

$$20 = \frac{\text{Sum of no.}}{7}$$

$$\text{Sum of no.} = 20 \times 7 = 140$$

As it's consecutive no.

So,

$$x, x+1, x+2, x+3, x+4, x+5, x+6.$$

$$n + n+1 + n+2 + n+3 + n+4 + n+5 + n+6 = 140$$

$$7n + 21 = 140$$

$$7n = 140 - 21$$

$$7n = 119$$

$$n = 17$$

$$\begin{array}{r} 17 \\ 7 \overline{) 119} \\ \underline{7} \\ 49 \\ \underline{49} \\ 0 \end{array}$$

largest no. is $n+6$

so,

$$17+6 = 23$$

b) Solution:

As given in the statement that

C is nephew of
A's father.

so

A and C are
Cousines.

while

D is also cousin
of C

But

D is not brother of C.

~~which means that
D is sister of C~~

Therefore,

~~Relation between
C and D is that
of siblings.~~

~~C & D are brother
and sister respectively.~~

d) Given:

$$A : B = 1 : 2$$

$$B : C = 3 : 2$$

$$C : D = 3 : 4$$

$$A : D = 2 : 4$$

Required:

Share of B = ?

Solution:

Let suppose

$$A = 1x$$

$$B = 2x$$

then

$$2n : c = 3 : 2$$

$$3c = 4n$$

$$c = \frac{4n}{3}$$

then

$$c : D = 3 : 4$$

$$3D = 4 \left(\frac{4n}{3} \right)$$

$$3D = \frac{16n}{3}$$

$$D = \frac{16n}{9}$$

As given.

$$D - A = 2240.$$

$$\cancel{1n} - \frac{\cancel{16n}}{9} = \cancel{2240}$$

$$\frac{9n - 16n}{9} = 2240$$

$$\frac{7x}{9} = 2240$$

$$7x = 20160$$

$$x = \frac{20160}{7}$$

$$x = 2880$$

$$\begin{array}{r} 23 \\ 2240 \\ \hline 20160 \end{array}$$

$$\begin{array}{r} 2880 \\ 7 \overline{) 20160} \\ \underline{19600} \\ 5600 \\ \underline{5600} \\ 0 \end{array}$$

As $B = 2x$

So

$$B = 2(2880)$$

$$B = 5760$$

$$\begin{array}{r} 11 \\ 2880 \\ \hline 5760 \end{array}$$

Result:

$$B = 5760.$$

Keep proportion in your answer
Write all steps of maths calculation.

Keep relevancy

Use scientific examples and terminologies.

Draw neat and clean diagrams.

Work on paper presentation

Improve content