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PART = II
SECTION = A

QNo4

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.

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

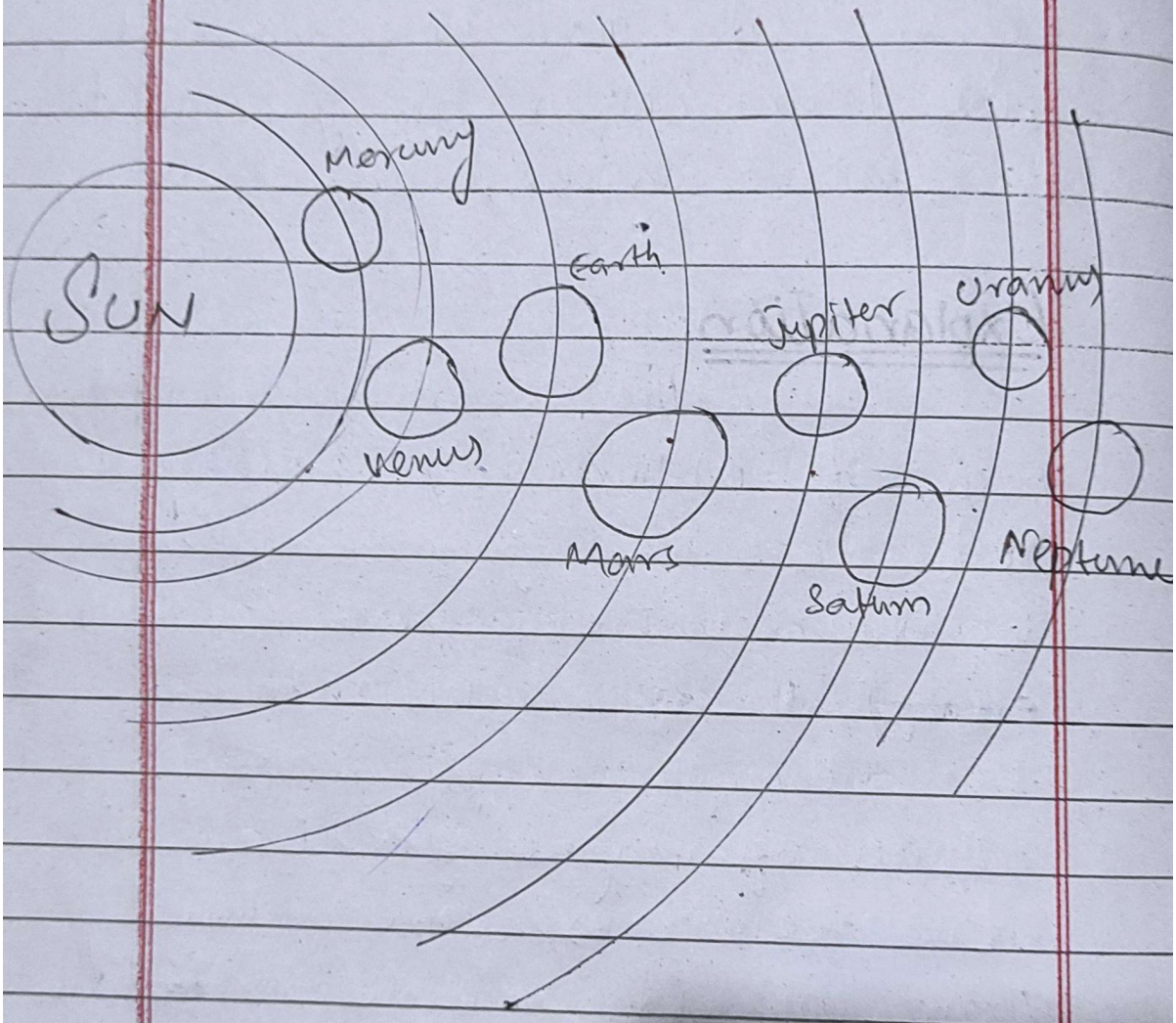

Fig: Solar System

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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 harmone. It also release certain harmones which control function of other harmones in other part of body. There harmones are called tropic harmones.

i) Tropic harmones of Pituitary gland:

a) Thyroid Stimulating Hormones: It is release

from Anterior lobe. and control the function of Tyroid gland through negative feedback mechanism.

b) Adreno-corticotrophic hormone: (ACTH)

It is also release from Anterior portion. Control the function of Adrenal gland, around kidney

c) Lutenizing Hormone (LH):

Release from Anterior portion help in procen of lutenization after release of ova in female

d) Follicle-Stimulating Hormone:

It help produce/Stimulate follicle a matura ova and release it. In male it

help nurturing of sperm and production of Testosterone

Other important functions of Pituitory Gland:

a) Stimulating Growth:
It release growth hormone essential for proper growth of body.

b) Prolection: 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 controling procen of ureals.

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Conclusion:

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

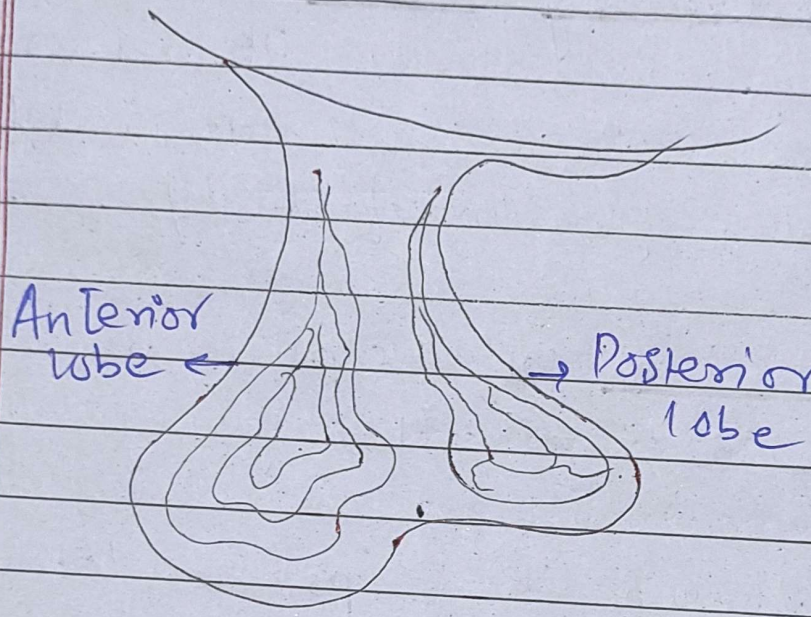

Fig: Pituitary Gland

Answer:

Difference between RAM and ROM:

ROM	RAM
It stands for Read only	It stands for random Acces

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	memory	memory
→	It is permanent Storage.	It is not permanent but temprory storage
→	Provides slow accen as compared to RAM	Provides quick access to data
→	It's data is not volatile.	It's data is volatile.
→	It's comparatively smaller in size	It is comparatively larger in size.
	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 units is connected.

d) Answer:

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

a) Global financing pledge:

Dev countries pledge that they will ensure finance of $300 billion annually, $900 more than prious $100b pledge.

b) Loss & Damage Fund:

They committed to operationalize loss & damage fund initated at COP-29. $790 million were pledge to LandD fund.

c) Biennial Transparency Report:

Countries were abide to ensure transperency in ther measure taken to overcome climate crisis, they must release Biennial transparency report.

d) Operalisnalization 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 emissions.

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Conclusion:

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

NO5

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

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regions.

Role in formation of Cyclone:

As we known, cyclone are form through/due to low-pressure centre. The rising sea surface temp. provides these centres. When the temp. of sea surface rise the water vapours evaporate, generating a low alnp pressure centre. The air from poles start running toward this centre. Due to corillis effect, the wind took a turn generating a cyclone.

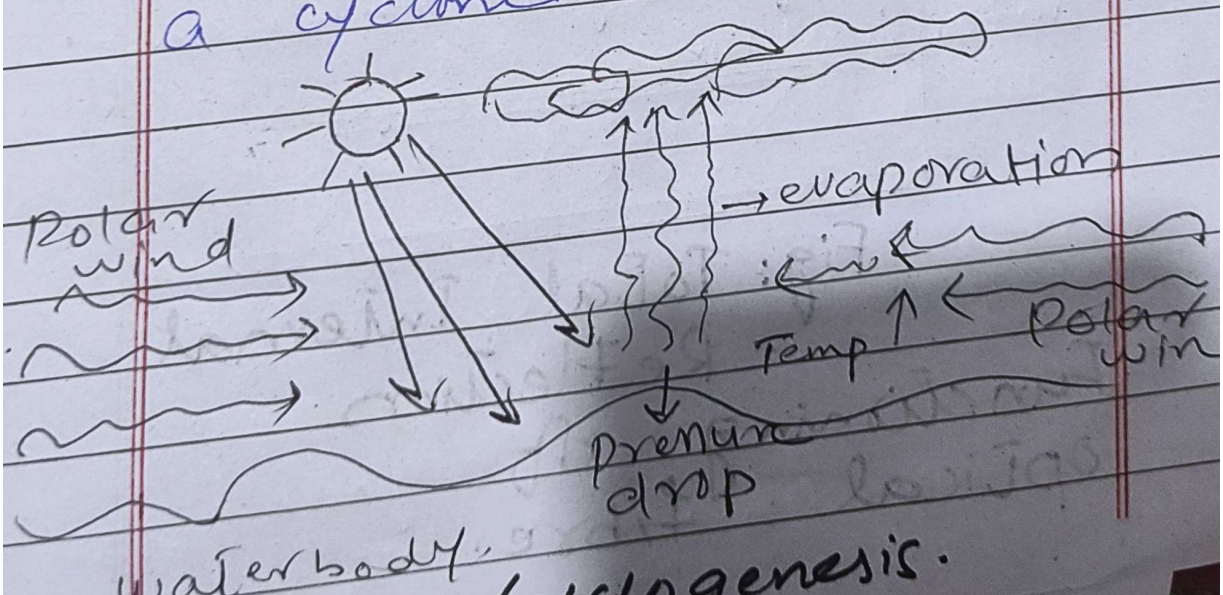

Fig: Cyclogenesis.

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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.

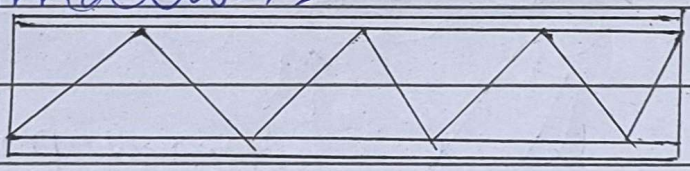

Fig: Total Internal Reflection

Functioning of optical fibre:

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

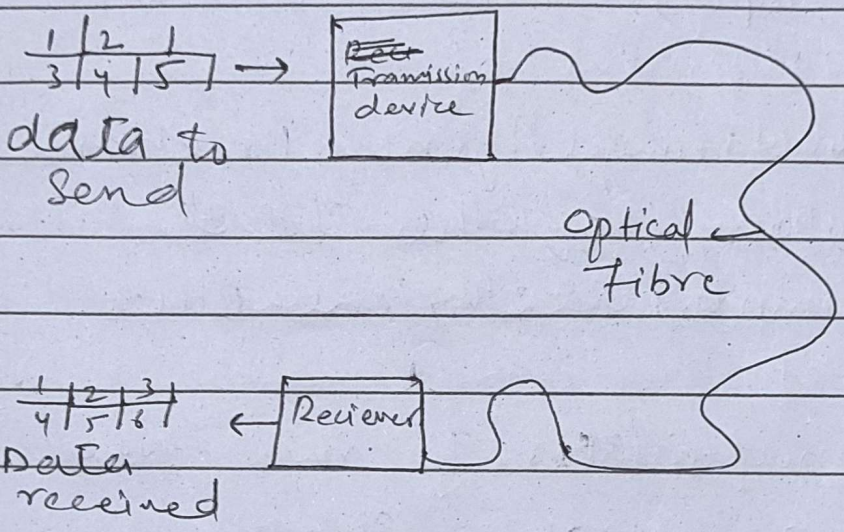

Fig: Functioning of Optical Fibre System.

d) Answer:

Food Additives:

There are various substances added

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to food for preservation, colour or taste enhancing purpose.

Types of Additives:

i) Preservative: To protect food from spoilage or developing 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 flavours of add flavour of a specific food item include both natural and artificial flavouring.

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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 sulfides and nitrides which not only avoid bacterial growth but also work as avoiding de-colouring.

c) Answer:

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

a) Help in decomposite formation:

Bacterial growth in organic waste helps development of decomposite which not only help overcome 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 (CH_4).

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 * $(0.90)^3$

current price = 8748.

So

$8748 = (x) \times 0.729$

$x = \frac{8748}{0.729} = \frac{8748000}{729}$

$= 12,000$.

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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 known 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 five year.~~

Present Ages are.

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Father age = $4x = 4(10) = 40$
daughter age = $x = 10 = 10$

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

$40 + 10 = 50 \Rightarrow$ father Age
$10 + 10 = 20 \Rightarrow$ daughter Age.

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

---

c) Given:

Diameter = 12cm

Required:

Volume of
football = V. = ?

Solution:

As we know that

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

Put the values.

$V = \frac{4}{3}(3.14)(12)^3$

$= \frac{4}{3}(3.14)(1728)$

$= \frac{4}{3}(5428.7)$.

$V = \boxed{7238.3}$

Q.No 7

Given:

Average of 7 consecutive numbers = 20.

Required:

largest no. = ?

Solution:

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

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

Sum of no. $= 20 \times 7 = 140$

As it is consecutive no.

So,

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

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$x + x+1 + x+2 + x+3 + x+4 + x+5 + x+6 = 140$.

$7x + 21 = 140$

$7x = 140 - 21$.

$7x = 119$

$\boxed{x = 17}$.

$7 \overline{)119}$ (17)

7

49

49

Largest no. is $= x+6$.

So,

$\boxed{17+6 = 23}$.

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.

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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 = 2940.

Required:

Share of B = ?

Solution:

let suppose

A = 1x

B = 2x.

then

$$2x : C = 3 : 2$$

$$3C = 4x$$

$$\boxed{C = \frac{4x}{3}}$$

then

$$C : D = 3 : 4$$

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

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

$$\boxed{D = \frac{16x}{9}}$$

As given:

$$D - A = 2240.$$

$$\frac{16x}{9} - 1x = 2240.$$

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

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

$7x = 20160$

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

$\boxed{x = 2880}$

As $B = 2x$

So

$B = 2(2880)$

$\boxed{B = 5760}$

Result:

$B = 5760.$

2 3
2240
9
20160

2880
7 | 20160

1 1
2880
2
5760