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PART - 2

Overall attempt is Good.

Work on time management

Follow this pattern for maths

Given data

Required

Solution.

Section - A Question No. 3

1A) what are proteins digestion.

Keep relevancy

Follow proper pattern of the

answer according to the

question

Make headings according to the

question

Stick to question demand

Proteins

Proteins form the building blocks of all our muscles, organs and tissues. Through protein-linkages they form bonds with one another to form connective tissues that result into complete organ and muscles.

Proteins are found mainly in meat, vegetable, milk and grains/pulses.

Digestive Process of Proteins

Proteins are broken up in the stomach from protein molecules into protease

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Protease is further broken up and absorbed by the cell walls of the intestines.

Carbohydrates

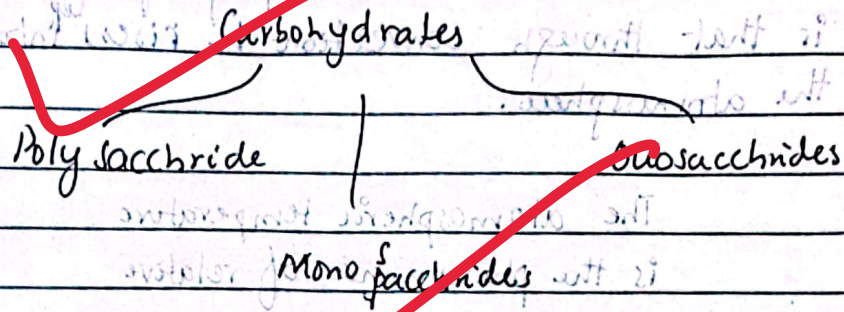
Carbohydrates are the main energy source for the body. They help in the functioning of the nervous system, vital organs and brain. Without carbohydrates, the body does not function at its best and may experience anxiety, of weakness and so on.

They are found mainly in fruits, grains, milk, vegetable and so on.

Digestion Process of Carbohydrates

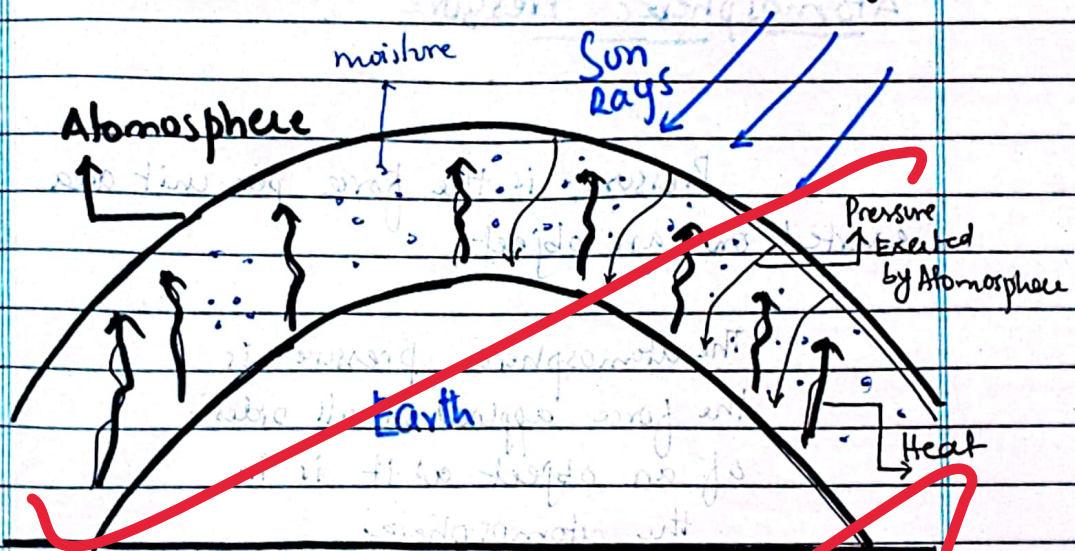
Digestion of carbohydrates begins in the mouth when it is broken up with the help of saliva and amylase. Then in the stomach it is further broken up into

glucose and the following compounds.



All are then absorbed by the cell walls for absorption and transmission to the body.

(B) Atmospheric humidity?



Atmospheric Temperature

The sun and

Earth radiate heat. The property of heat is that- through convection it rises into the atmosphere.

The atmospheric temperature is the phenomena of relative difference b/w the heat transfers of two stages. The temperature ranges from below zero to above 1000°C . The temperature at that point in the atmosphere is known as atmospheric temperature.

Atmospheric Pressure

Pressure is the force per unit area exerted on an object.

The atmospheric pressure is the force applied on all sides of an object as it is in the atmosphere.

The atmospheric pressure is measured in 'atm'. At sea level the pressure is 1 atm.

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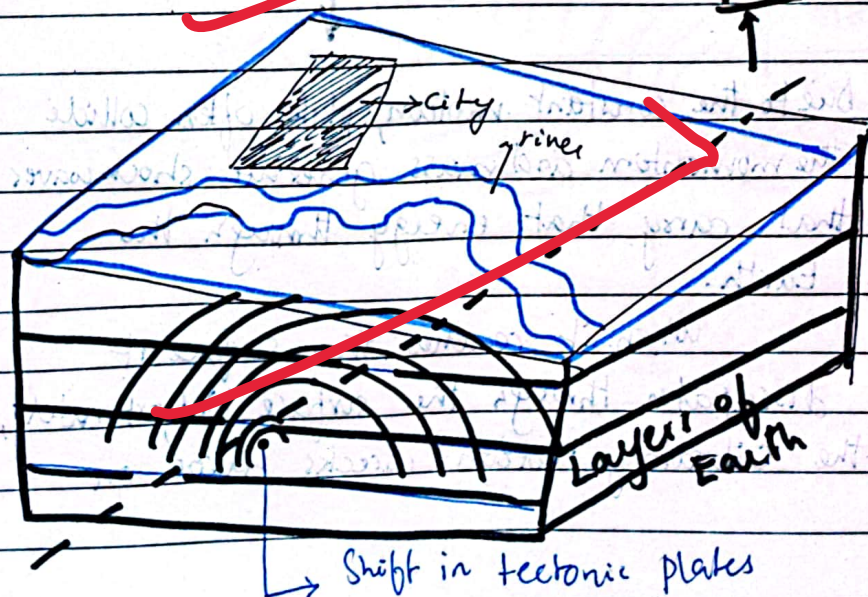
When we go higher, the ^{pressure} decreases while when one goes deeper, (the) ^{it} increases

Humidity

It is the measure of the moisture content present in the air at any given point of time.

The conditions for rain require high humidity and low pressure. It is measured in %.

(C) Explain ... diagrams

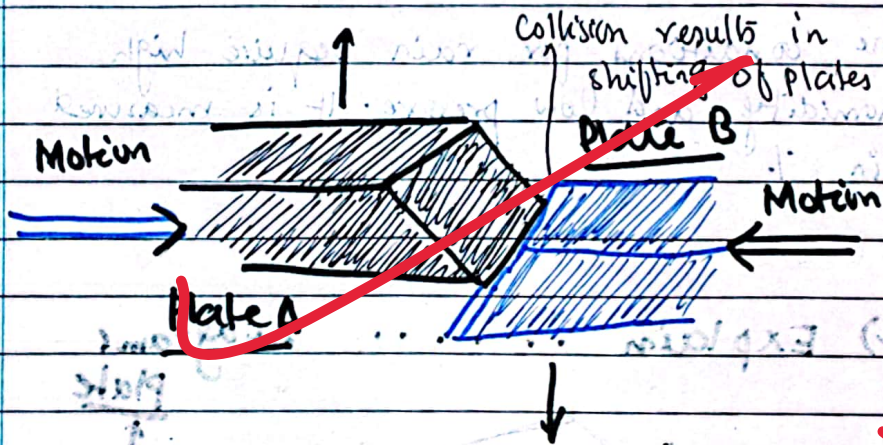


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Earthquakes

Earthquakes are a natural phenomena that occur on a daily basis.

They occur when two tectonic plates collide, shift or interact. Since the Earth's crust is in motion, tectonic plates are also in motion.



Due to the constant motion, plates often collide. The momentum and mass generate shock waves that carry that energy through the Earth.

When it reaches the surface it dissipates through the surface. Unfortunately, the vibratory motion wrecks havoc on

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everything.

(D) Explain **RADAR**

RADAR

Radar stands for

R → Radio

D → Detection

A → And

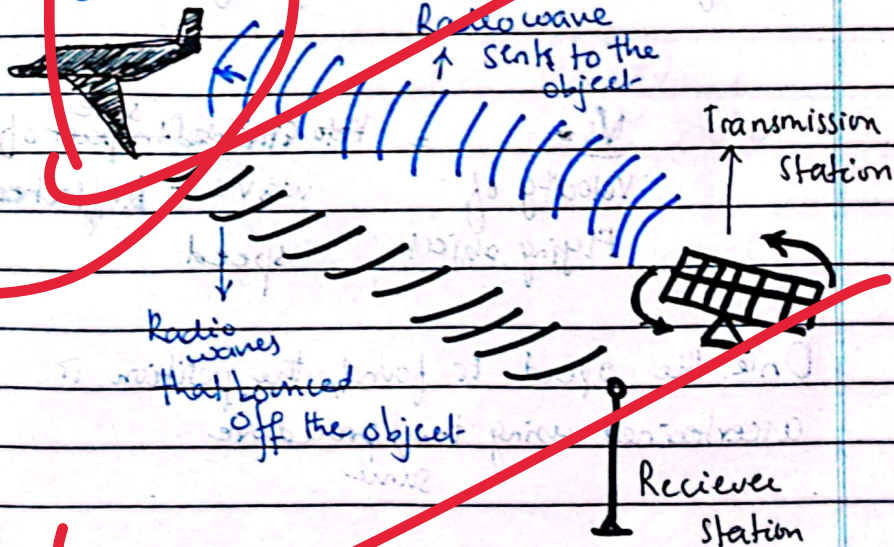
R → Ranging

ranging. A radar works

on the scientific principle

of the Doppler Effect and shift.

Working Theory



A radar sends a radiowave of a

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specific frequency in the air. when the object that is flying in the air interacts with those radiowaves,

a) Radiowaves are absorbed

b) Radiowaves are reflected back

When the latter happens, the radiowaves are sent back as they strike and get reflected off the body. They are then picked up by the receiver station.

The radar calculates the position of the object by constantly sending and receiving waves.

The calculation is done using the doppler shift formula.

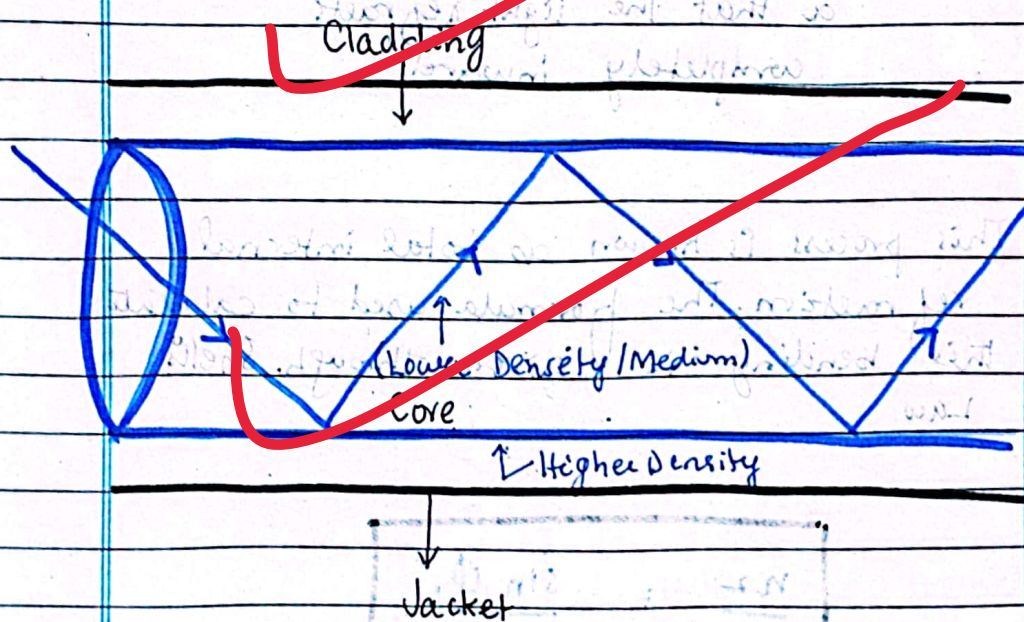
$$V_s = \frac{V_0 (1 - \frac{v}{c})}{1 + \frac{v}{c}}$$

Velocity of Flying object = V_0 (Initial speed of wave) - Reflected speed

Once the speed is found, the position is ascertained using the same procedure.

QUESTION No. 5

B) How does optical fiber work?



DFC Principle

An optical fiber cable is made out of glass or highly refined plastic with a high refractive index. The DFC uses light instead of electrical signals to transmit data.

When light enters the core, a lighter medium, it is directed at such an angle that it strikes

the cladding, a denser medium,
 when light impacts the denser
 medium it refracts/bends from
 its original path. The angle (critical)
 of the bending is kept so such
 a that the light refracts
 completely inward!

This process is known as total internal
 refraction. The formula used to calculate
 this bending is given through Snell's
 Law

$$\frac{n_2}{n_1} = \frac{\sin \phi_1}{\sin \phi_2}$$

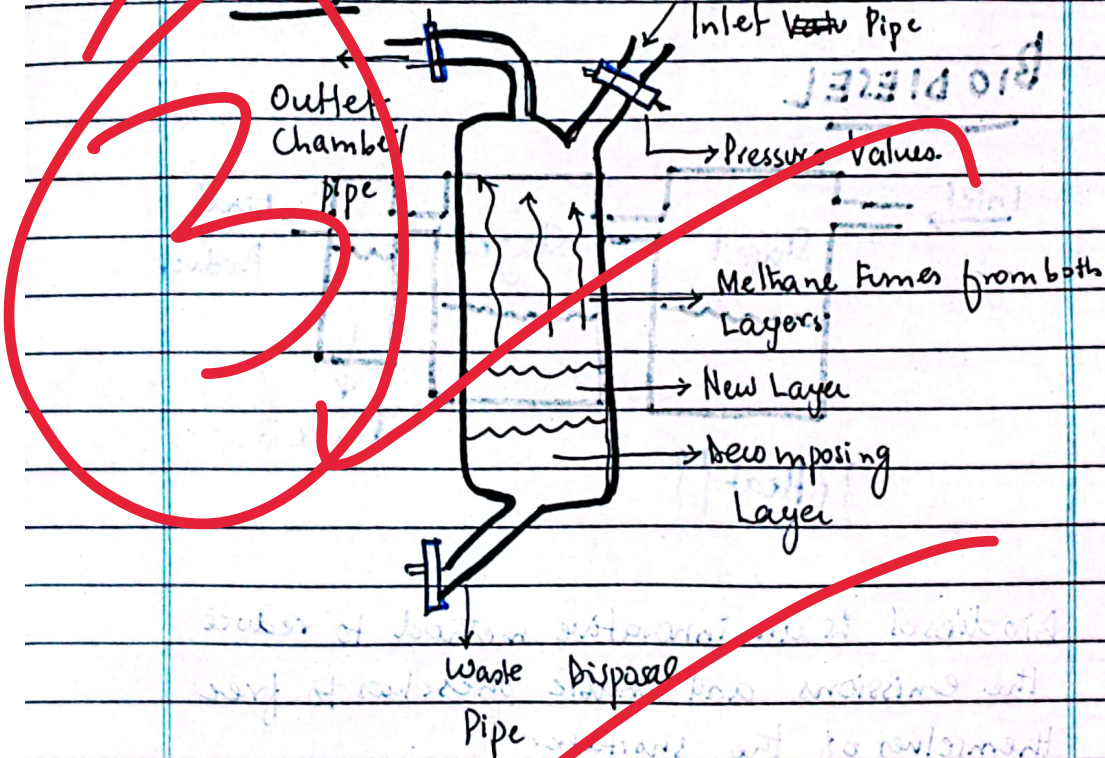
n_2, n_1 indicate the light rays and
 ϕ is the angle of incidence and refraction
 respectively.

(C) Discuss shortage.

The global volatility in the fuel markets has shown the level of optimization and capacity in the system. It has exacerbated fuel shortages at home and abroad.

In this scenario, a novel approach has given people and they are given below

BIOGAS



Biogas is an environmentally friendly solution to get self-sufficiency at energy production. It works

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to a confined container. The microbial activity is used to decompose the waste in order to release the oil within compounds. Heat and mixing is done to create a solution.

Solution Stage 2 Solution is transferred to another container where it is introduced to further microorganisms that eat away any excess compound. At this point, some diesel is introduced to increase octane number.

Stage 3

Further Refinement is done and finally used to power vehicles, stores and etc.

(D) Briefly Describe

Food Additives

Food additives are introduced during the production process to enhance certain characteristics of the

Food Preservative

Food preservatives are introduced during and after the production process to enhance the shelf life

Food additives are substances added to food to enhance visual appeal, smell, or taste of the food. Preservatives are added to slow down the rate of decomposition of the food.

Food additives are both natural and artificially produced. Both natural and synthetic preservatives are used. However,

synthetic preservatives come with side effects.

Some natural additives to enhance are used in everyone's home such as salt, sugar, vinegar and etc.

Some natural preservatives are rosinarely oil, salt and so on.

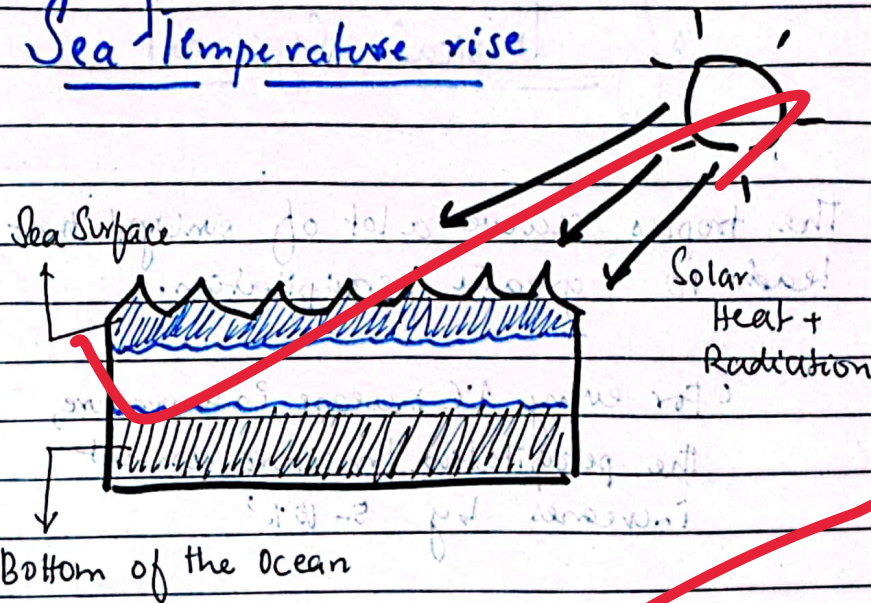
Some synthetic compounds include E13, E12 (used in orange jam to induce citrus flavour)

Some synthetic preservatives include Sodium nitrate, Paraben, etc.

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(A) What is cyclones?

Surface
Sea Temperature rise



The sea surface absorbs heat, due to the molecular motion of the particles, they get energized and finally evaporate. Cold water from below the ocean surface replaces the surface layer.

Sea Surface Temperature rise is the rise in temperature of the surface temperature of the sea. When it gets too hot, evaporation rates increase leading to greater moisture content in the air.

Sea Surface Temp. & Formation of Tropical Cyclones

The tropics receive a lot of sunlight that leads to greater precipitation.

For every 1°C increase in temperature, the precipitation/moisture content increases by 5-10%.

The higher the sea surface temp, the warmer winds will pick this moisture and go into the atmosphere. The updraft will lead to sudden collapse of the cold air that will rush in to fill the void, leading to the formation of fast moving air and a cyclone.

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SECTION B

QUESTION 6

(A) Data

Depreciation rate = 10% (10)

Present value ₹ 8748

Price 3 years ago = ?

Solution

Since depreciation

rate is 10% and

time period is 3 years

Total value depreciated = 30%

Now

$$\Rightarrow 8748 \times 30\%$$

$$= ₹ 2624.4$$

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Now purchase price
3 years would

⇒ Present price + Depreciation

$$= 8748 + 26244$$

$$= \text{Rs. } 11372.4$$

Ans (A)

(B)

Let age of father = x
Present value = 10

$$\text{Father} = 4 \times \text{Daughter age}$$

After 5 years

$$5 + \text{Father} = 3 \times \text{Daughter age}$$

After 5 years

$$\text{Father} = ?$$

Solution

Conditioning

$$\text{Daughter} = x$$

$$4 \text{ Father} = 4x$$

$$\text{After 5 years: } 5 + 4x = 3(x+5)$$

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

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$$x = 10$$

10 years

(1)

Initial age = Father's age

11 = 40 years

Now after 10 years =

11 = 50 years

Father = 50

Daughter = 20

Father is daughter age = $50 = 2.5 \times 20$

$$\text{Father} = 2.5 \times \text{Daughter age}$$

(c) Data

Volume = ?

$$r = \frac{d}{2}$$

2(Radius) = 2(Diameter)

$$\text{diameter} = 12 \text{ cm} = \frac{12}{2} = 6 \text{ cm}$$

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

$$= 4 \times (3.14) \times (6)^3$$

$$= 4 \times (3.14) \times \frac{72}{1}$$

$$= 904.32 \text{ cm}^3$$

(b)

Data

$$01 = 19$$

Time taken by Train 1 = 27 secs

Train 2 = 17 "

Time taken to cross each other = 23 "

Solution

(Let length of train 1 be x)
 (and 2 be y)

$$s = vt$$

$$x = v_1 t = x$$

$$y = v_2 t = y$$

$$s_x = x \cdot 27$$

$$s_y = y \cdot 17$$

So,

$$\text{Average speed} = 23 = \frac{s_x + s_y}{x + y}$$

$$\frac{s_x + s_y}{x + y} = 23$$

$$s_x + s_y = 23(x + y)$$

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$$\rightarrow 27x + 17y = 23(x + y)$$

$$\Rightarrow 27x - 23x = -17y + 23y$$

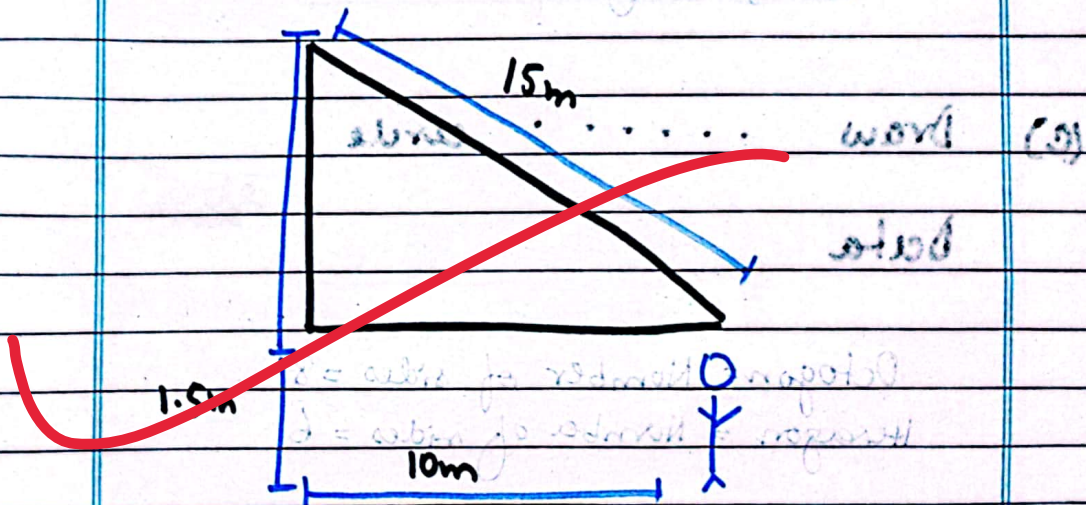
$$4x = 6y$$

$$\frac{x}{y} = \frac{6}{4}$$

$$x : y :: 3 : 2$$

QUESTION No. 8

(A) Data



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Apply Pythagoras Theorem

$$(15)^2 - (10)^2 = (\text{Height})^2$$

$$225 - 100 = (\text{Height})^2$$

$$\sqrt{125} = \text{Height}$$

$$11.81 \text{ m} = \text{Height}$$

Add Ali's height

$$\text{Ali} = 1.5 \text{ m}$$

$$11.81 + 1.5 \text{ m} = 13.31 \text{ m}$$

Height of tree = 13.31 m (A)

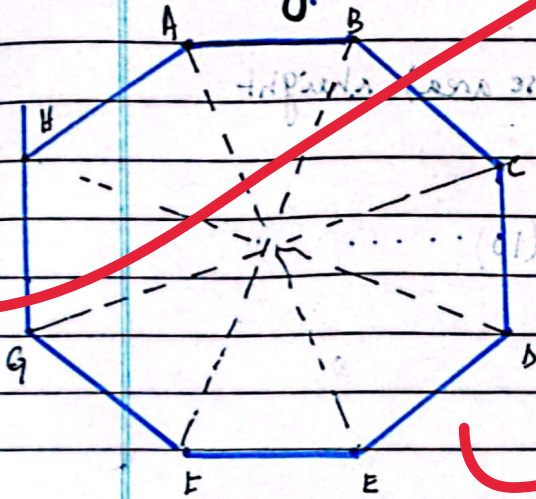
(c) Draw circle

Data

Octagon = Number of sides = 8
Hexagon = Number of sides = 6

Lines of symmetry for

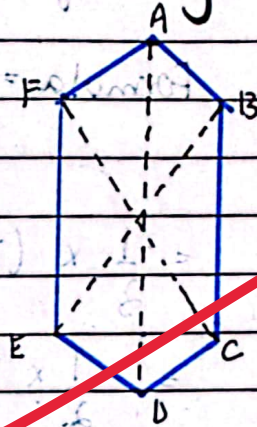
Octagon



Lines of Symmetry = 8

- $\overline{AE}, \overline{EA}, \overline{CG}, \overline{GC}, \overline{IH}, \overline{HI}, \overline{BF}, \overline{FB}$

Hexagon

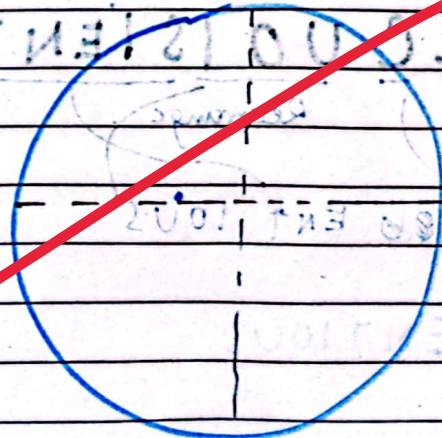


Lines of symmetry =

- $\overline{AD}, \overline{DA}, \overline{EB}, \overline{BE}, \overline{FC}, \overline{CF}$

Circle

A circle has no sides, thus it has infinite lines of symmetry.



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(D)

Data

Base Rectangular :- 7×5

Height = 10cm

Formula = $\frac{1}{2} \times (\text{base area}) \times \text{height}$

$$= \frac{1}{2} \times (7 \times 5) \times (10)$$

$$= \frac{1}{2} \times 35 \times 10$$

$$= 350$$

$$= 116.6 \text{ cm}^3$$

(D)

Data

(a)

SONC C U O I S I E N T

Rearrange

Rearrange

CONSCIOUS

CONSCIENTIOUS

(b)

E I V E N P R R A O C T

P E R S O N A T I V E

(c)

U O R S I U L A C

R I D I C U L O U S
R I D C U L O U S

(No pattern being followed)

(d)

U N S P R E S E

P R E

(e)

N M I L A D P C

C O M P L A I N

(No pattern was followed)

Complain