DATE: __/__/____

PART = 2

SECTION = A

Question No. 3

(A) What are proteins ..... digestion.

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 red meat, vegetable, milk and grains/pulses.

Digestive Process of Proteins

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

DATE: __/__/____

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, 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

DATE: __/__/____

glucose and the following compounds.

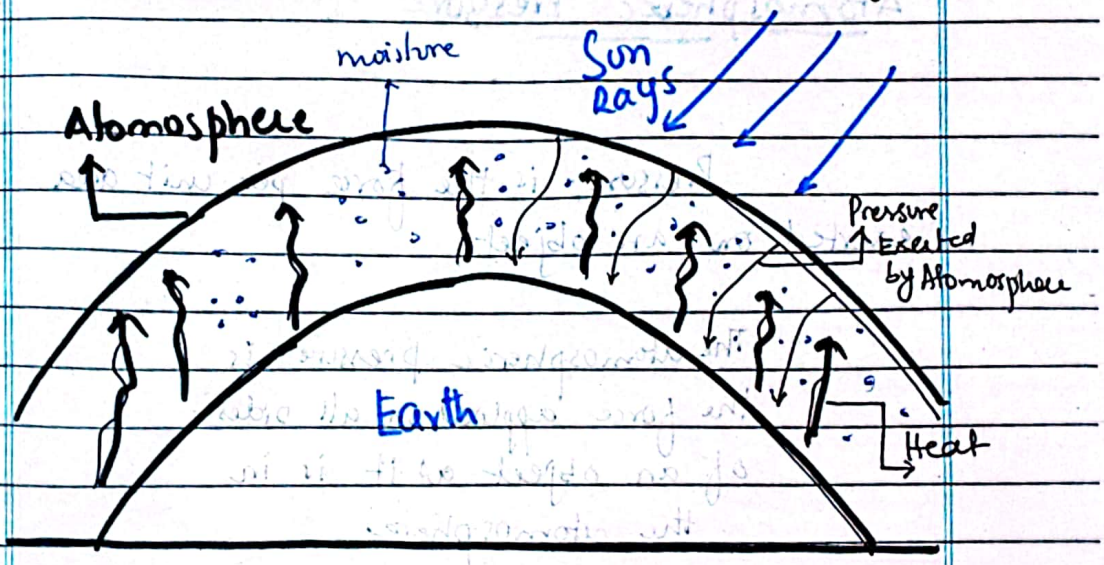
Carbohydrates

Poly saccharide | Oliosaccharides

Monosaccharides

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

(B) Atomospheric ..... humidity?



Atomospheric Temperature

The sun and

DATE : __ /__ /____

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

The atomospheric temperature is the phenomena of relative difference blw the heat transfers of two stages. The temperature ranges from below zero to above 1000°C. The temperature at that point in the atomosphere is known as atomospheric temperature.

Atomospheric Pressure

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

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

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

DATE: __/__/____

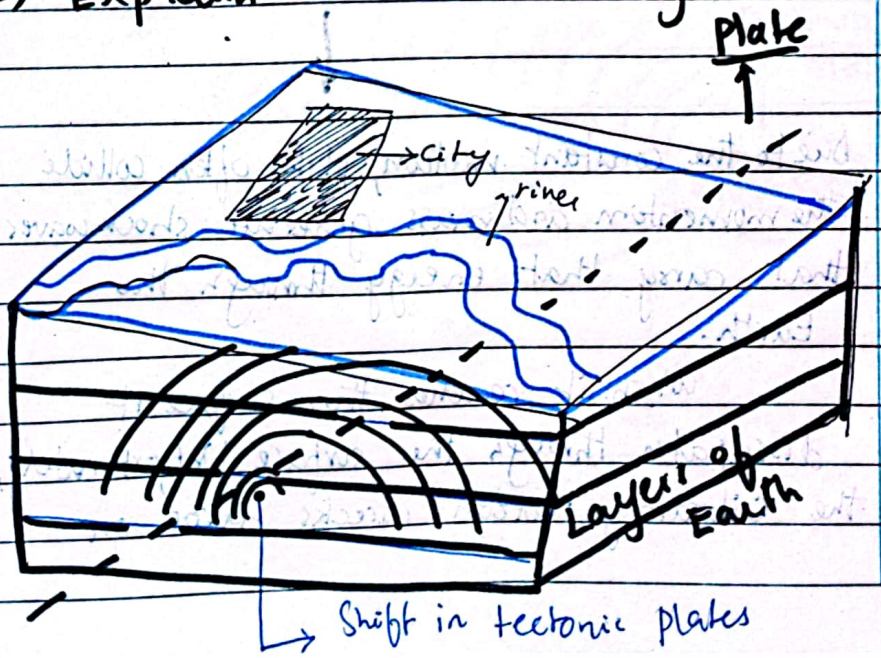
When we go higher, the pressure decreases while it increases when one goes deeper, (the)

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

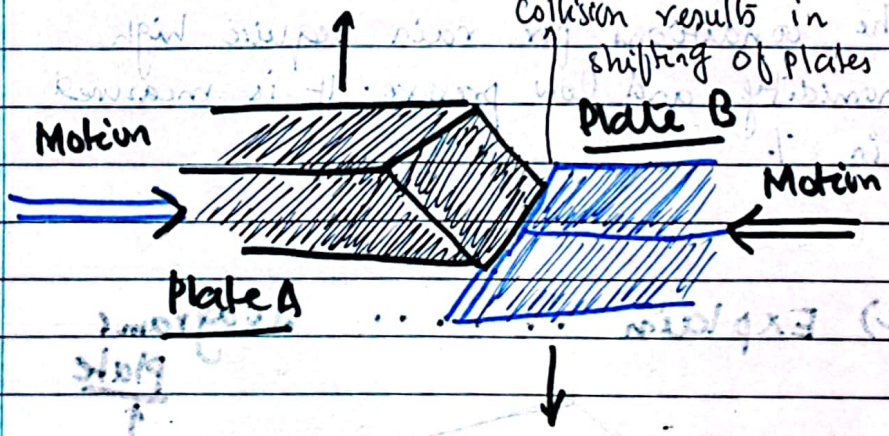


DATE: __/__/____

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 dissapates through the surface. Unfortunately, the vibratory motion wrecks havoc on

DATE: __/__/____

everything.

(D) Explain ..... RADAR

RADAR

Radar stands for

RA → Radio

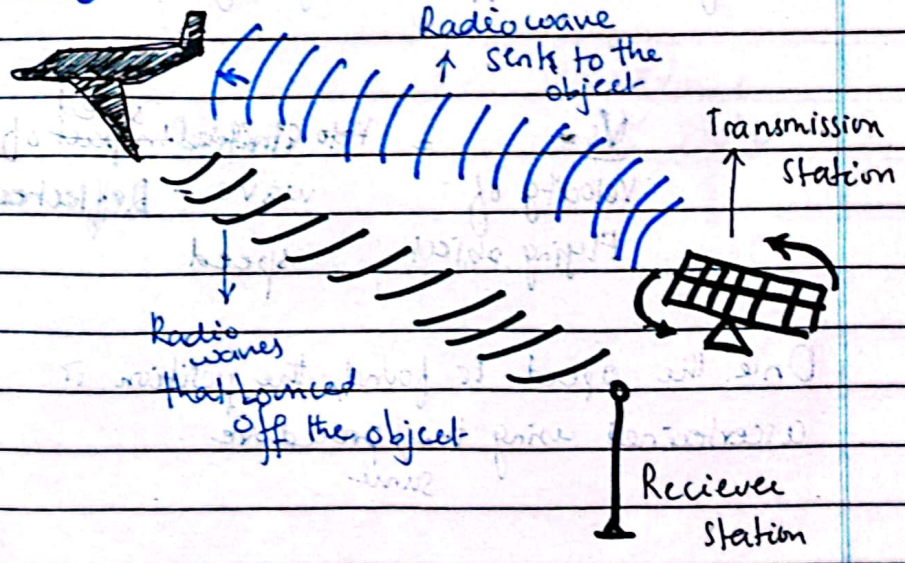
D → Detection

A → And

R → Ranging

Radio detection and ranging. A radar works on the scientific principle of the Dopplei Effect and shift.

Working Theory



A radar sends a radiowave of a

DATE: __/__/____

specific frequency in the air. when the object that is flying in the air interacts with those radiowaves, 2 things;

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 reciever station.

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

The calculation is done using the doppler shift formula

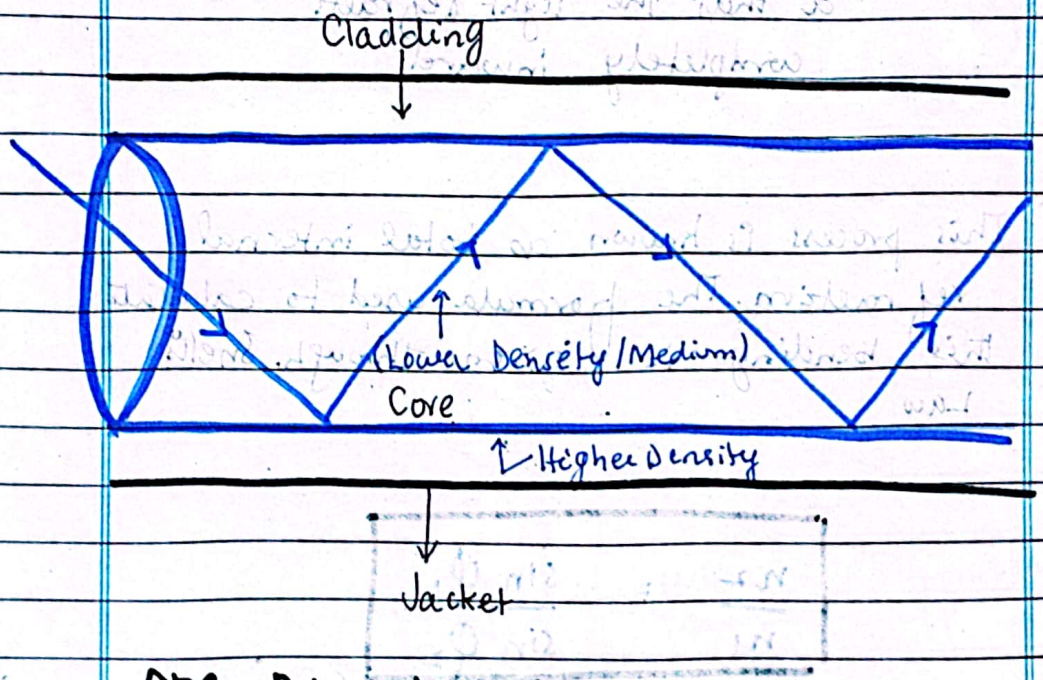
Vs = Velocity of Flying object = ~~Velo~~ ~~Initial~~ ~~Impact~~ speed of wave - Reflected speed

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

DATE: __/__/____

QUESTION NO.5

B) How does optical fiber work?



OFC Principle

An optical fiber cable is made out of glass or highly refined plastic with a high refractive index. The OFC 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

DATE: __/__/____

the cladding, a denser medium, when light impacts the dense medium it refracts / bends from its original path the angle (critical) of the bending is kept in 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

$$\frac{n_2}{n_1} = \frac{\sin \Phi_1}{\sin \Phi_2}$$

(incidence & refraction)

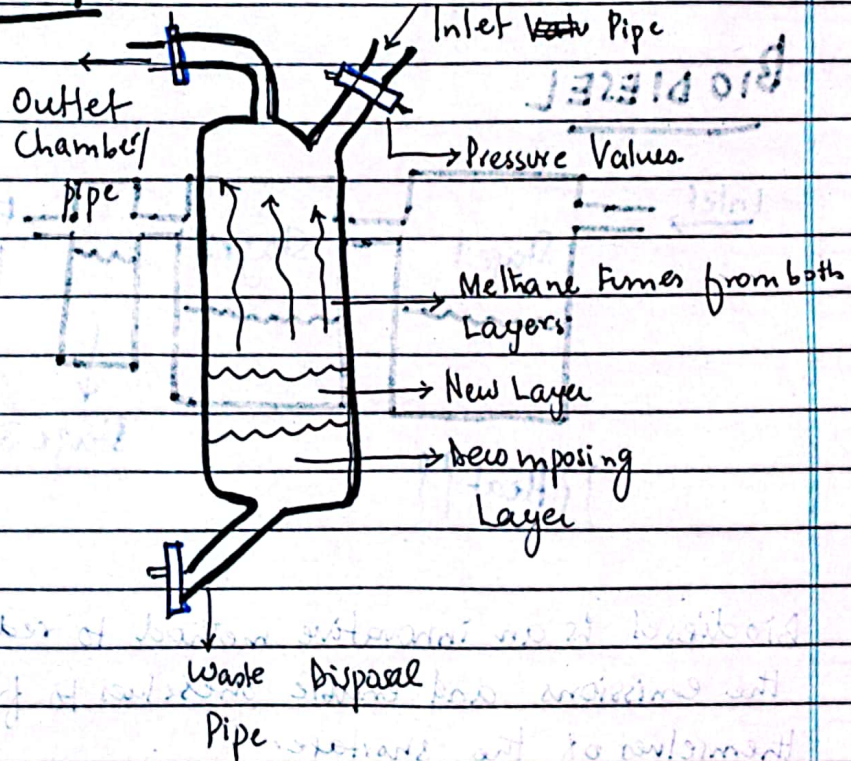
n_2, n_1 indicate the light rays and Φ is the angle of incidence and refraction respectively.

DATE: __/__/____

(c) Discuss . . . . . shortage.

The global volatility in the fuel as 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

DATE: __/__/____

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.

Stage 2 Solution is transfered 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, stoves and etc.

(b) Briefly Describe

Food Additives	Food Preservative
Food additives are introduced during the production process to enhance certain characteristics of the	Food preservatives are introduced during and after the production process to enhance the shelf life

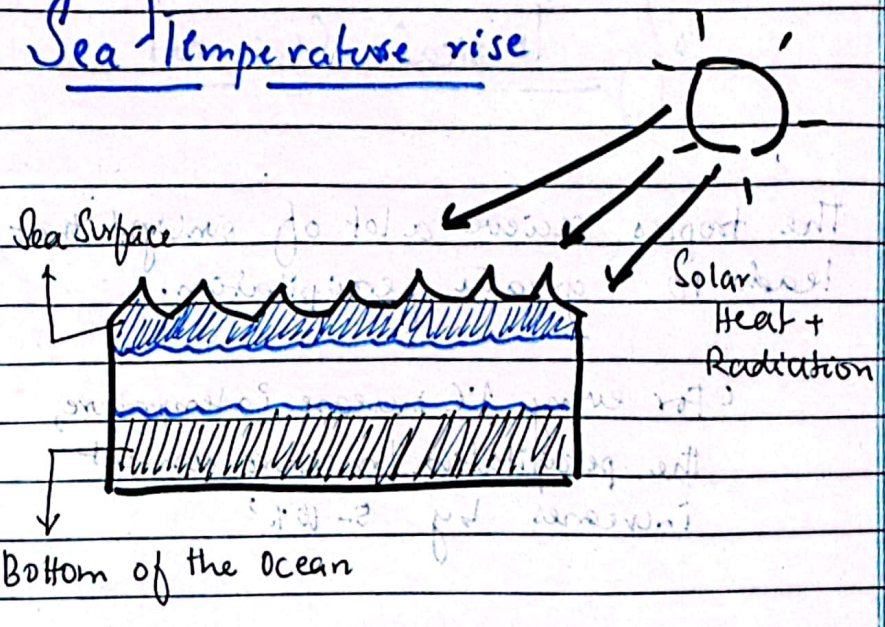
DATE: __/__/____

food	of the food.
Food additives aim to enhance visual appeal, smell or taste of the food.	Preservatives aims 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 with come side effects.
Some natural additives to enhance are used in everyones home such as salt, sugar, vinegar and et.	Some natural preservatives are rosmarey oil, salt and so on.
Some synthetic compounds include E133, E12 (used in orgorange jams to induce citrus flavour)	Some synthetic preservatives include Sodium nitrate, Paraben was etc

DATE: __/__/____

(A) What is . . . . . cyclones?

Sea Surface 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.

DATE: __ /__ /____

Sea Surface Temp. & Formation of Tropical Cyclones

The tropics recieve a lot of sunlight that leads to greater percipitation.

'For every 1°C increase in temperature, the percipitation/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 eye.

DATE: __/__/____

SECTION B

QUESTION 6

(A) Data

Depreciation rate = 10 %

Present value Rs. 8748

Price 3 years ago = ?

Solution:

Since depreciation rate is 10 % and time period is 3 years

Total value depreciated = 30 %

Now,

= Rs 8748 x 30 %

= Rs. 2624.4

DATE: __/__/____

Now purchase price 3 years would

⇒ Present price + Depreciation

= 8748 + 2624.4

= Rs. 11 372.4

(B) Data

Father = 4 x Daughter age

After 5 years

5 + Father = 3 x Daughter age

After 5 years;

Father = ?

Solution

Condition

Daughter = x

Father = 4x

After 5 years

5 + 4x = 3(x + 5)

DATE: __/__/____

$x = 10$ (1)

Initial age = Father = 40 years.

Now after 10 years =

Father = 50

Daughter = 20

Father is daughter age = $\frac{50}{20} = 2.5$

Father = 2.5 × Daughter age

(C) **Data**

Volume = ?

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

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

$= \frac{4}{3} \times (3.14) \times (6)^3$

$= \frac{4}{3} \times (3.14) \times 216$

$= 904.32 cm^3$

DATE: __ /__ /____

(b) Data :

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)

$S = vt$

$v_1 = x$

$v_2 = y$

So,

$S_x = x \cdot 27$

$S_y = y \cdot 27$

So,

Average speed $\Rightarrow 23 = \left(\frac{S_x + S_y}{x+y}\right)$

$\frac{S_x + S_y}{23(x+y)} = \frac{27x + 17y}{x+y} = 23$

DATE: __/__/____

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

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

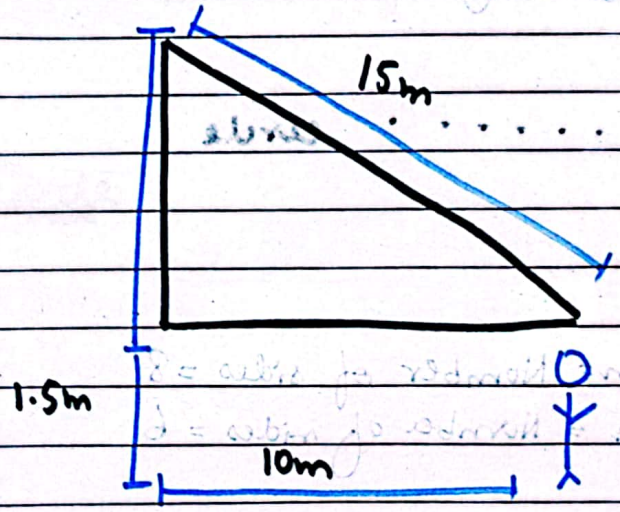
$4x = +6y$

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

$x : y :: 3 : 2$

QUESTION NO. 8

(A) Data



DATE: __/__/____

Apply Pythagorus theorum

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

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

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

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

Add Ali's height

Ali = 1.5 m

$11.81 + 1.5m = 13.31m$

Height of tree = 13.31 (A)

(C) Draw ..... circle

Data

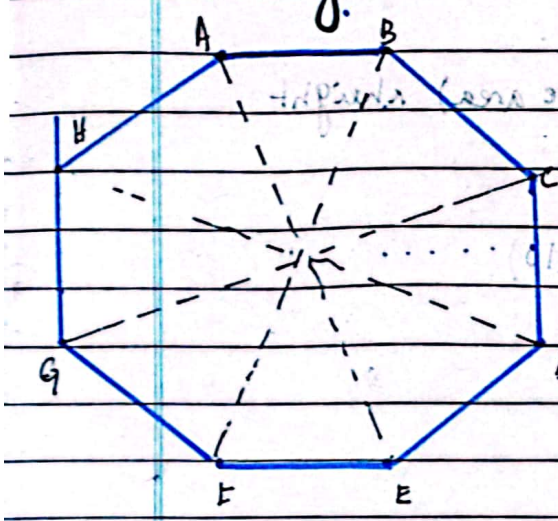
Octogon = Number of sides = 8

Hexagon = Number of sides = 6

DATE: __/__/____

Lines of symmetry for (1)

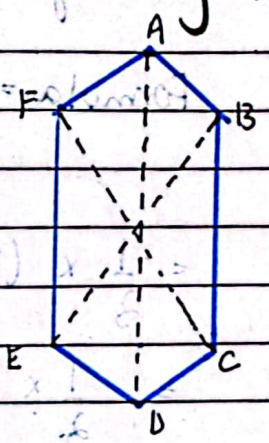
Octagon



Lines of Symmetry = 8

$[\bar{AE}, \bar{EA}, \bar{CG}, \bar{GC}, \bar{DH}, \bar{HD}, \bar{BF}, \bar{FB}]$

Hexagon



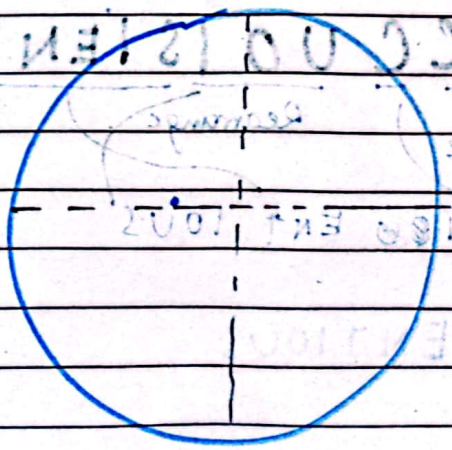
Lines of Symmetry = 6

$[\bar{AD}, \bar{DA}, \bar{EB}, \bar{BE}, \bar{CF}, \bar{FC}]$

(2)

Circle

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



DATE : __ /__ /____

(b)

Data:

Base Rectangular :- 7 x 5

Height = 10cm

Formula = $\frac{1}{3}$ x base area) x height

$= \frac{1}{3} \times (7 \times 5) \times (10)$

$= \frac{1}{3} \times 35 \times 10$

$= 350$

$= 116.6\ cm^3$

(B) Data

(a) SONCC UO ISIENT

Rearrange Rearrange

CONSCIOUS ENT TOUS

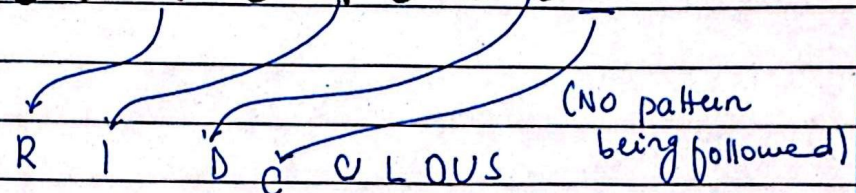
CONSCIENTIOUS

DATE: __/__/____

(b) E IVEN P RRA OST

PERSONATIVE

(c) U O R S I U L D C

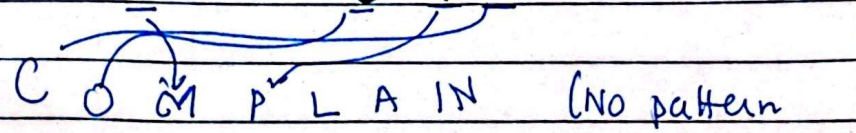


RIDCULOUS

(d) UNSPRESE

A R H

(e) N M I LA D PC



Complain