

Dos and Don'ts for the General Science & Ability Paper
Hi there — you've prepared well! Remember, knowing the content is one thing, but presenting it in the paper exactly as required is another. Here are a few key points to keep in mind:
1. For a 5-mark part, aim to write at least 2 and at most 3 sides of the answer sheet. Often, a question has two or three parts, and the marks are divided accordingly — so address each part fairly.
2. Manage your time wisely — you have about 35 minutes per full question, which comes down to around 8 minutes for each 5-mark part. Stick to this to avoid rushing later.
3. Make your answers look scientific, not just theoretical. Use flowcharts and diagrams wherever they add clarity.
4. Neatness matters — keep your handwriting clean, avoid cutting or overwriting.
5. Mind your spelling and grammar — while GSA doesn't deduct marks for these, your expression leaves an impression.
6. In the ability portion, explain analytical ability questions in words. For a 5-mark part, show all steps and provide clear explanations.

Date: _____

Here's a brief key/sample of your Ability questions

Q.6

a) Candy ratio problem

Given: Packets in flavors-Apple : Berry : Cherry : Date = 3 : 6 : 2 : 5.

Asked: If Apple candies exceed Date candies by 35, how many Berry candies are there?

Note (consistency check): The ratio shows Apple = 3 parts and Date = 5 parts, so Date is larger than Apple in the ratio. The statement "Apple candies exceed Date candies by 35" contradicts the ratio (Apple cannot exceed Date if ratio is 3:5). Two ways to handle this:

1. If the problem truly intends Apple – Date = 35, that's impossible with the given ratio (would require negative common factor)

2. Most likely the intended meaning is Date exceeds Apple by 35 (i.e. Date – Apple = 35). I will solve that reasonable interpretation.

Formula: Let common factor = k. Apple = 3k, Date = 5k.

So $5k - 3k = 35 \Rightarrow 2k = 35$.

Solution: $2k = 35 \Rightarrow k = 35 \div 2 = 17.5$.

Berry = $6k = 6 \times 17.5 = 105$.

Answer: 105 Berry candies.

(If you intended the other wording exactly as written, note that it is inconsistent with the ratio.)

b) Camera discount + tax

Given: Original price = \$200. Discount = 25% off. After discount, 6% tax applied.

Asked: Total amount paid.

Formula / Steps:

Discount amount = 25% of 200 = 0.25×200 .

Sale price = 200 – discount.

Tax = 6% of sale price.

Total = sale price + tax.

Solution (digit by digit):

Discount = $200 \times 0.25 = 50$.

Sale price = $200 - 50 = 150$.

Tax = $150 \times 0.06 = 9$.

Total paid = $150 + 9 = 159$.

Answer: \$159.00

c) Bicycle travel time

Given: Distance = 36 km, speed = 18 km/hr, start time = 1:00 PM.

Asked: Arrival time

Formula: Time = Distance ÷ Speed

Solution: Time = $36 \div 18 = 2$ hours. Start 1:00 PM + 2 hours = 3:00 PM.

Answer: 3:00 PM

d) Unscramble math terms

i. STATISTICS

ii. GAMBLER

Q7.

Given:

- Diameter (d) = 14 cm

- Radius (r) = $d/2 = 14/2 = 7$ cm

- $\pi = 22/7$

Asked: volume of sphere

Formula:

Volume = $(4/3)\pi r^3$

Now, let's plug in the values:

Volume = $(4/3) \times (22/7) \times (7)^3$

= $(4/3) \times 22 \times 7 \times 7$

= 1437.33 cm³

Answer:

The volume of the sphere is approximately 1437.33 cm³

(b) Five friends' savings (total Rs. 25,000; ratio 1:2:3:4:5)

Given: Total = Rs. 25,000; Ratio = 1 : 2 : 3 : 4 : 5.

Asked: Smallest share (the "1" part).

Formula: Sum of ratio parts = 1+2+3+4+5 = 15. Smallest = $(1/15) \times$ total.

Solution: Smallest = Rs.

Decimal $\approx$ Rs. 1666.67 (rounded).

Answer: Rs. 1666 2/3 ($\approx$ Rs. 1666.67)

(c) Spot the error / Complete the series

i. Sequence: 2, 6, 18, 54, 162, 486.

Given / Asked: Which number doesn't fit?

Analysis: Each term is $\times 3$ of previous: $2 \times 3 = 6$, $6 \times 3 = 18$, ..., $162 \times 3 = 486$. All terms follow the geometric rule.

Answer: None — all numbers fit the $\times 3$ pattern.

ii. Sequence: 3, 5, 7, 11, 13, ____.

Given / Asked: Next number.

Analysis: These are consecutive prime numbers starting at 3: 3, 5, 7, 11, 13, 17 (note 9 is not prime, so it's skipped).

Answer: 17

(d) Triangle with sides 5 cm, 12 cm, 13 cm: find all three angles

Given: Sides = 5, 12, 13. Note: $\times$ right triangle. Hypotenuse = 13 cm.

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Part-II

Section-1

Question # 04

and a

Chlorophyll

Plant kingdom is the group

of organisms which are able to make

their own food by utilizing sunlight.

"Chlorophyll" is the pigment in

Plant kingdom which is used to absorb

light and give the green colour to

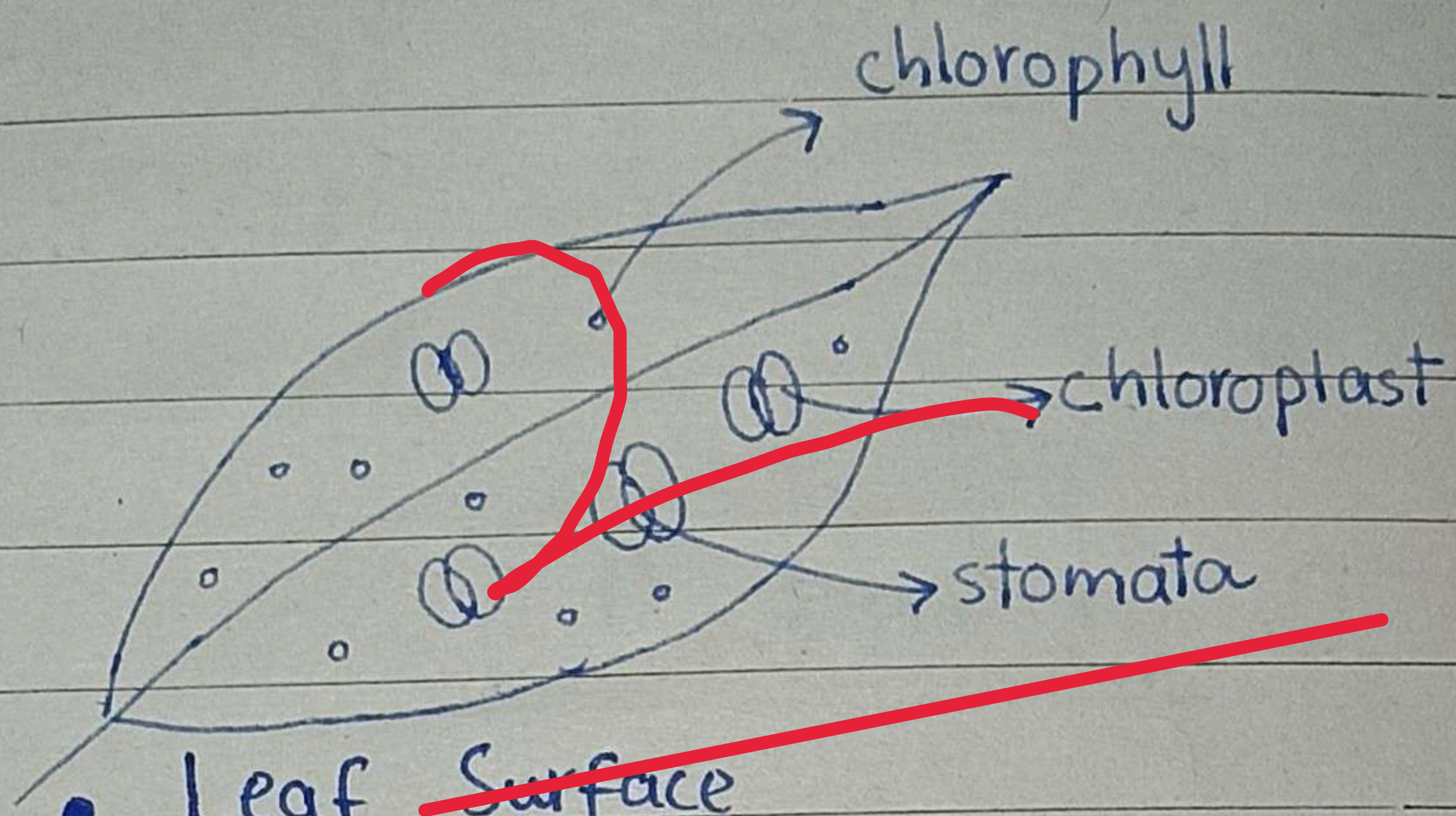
plants.

Chlorophylls are present in chloroplast

which absorbs the red and blue wave-

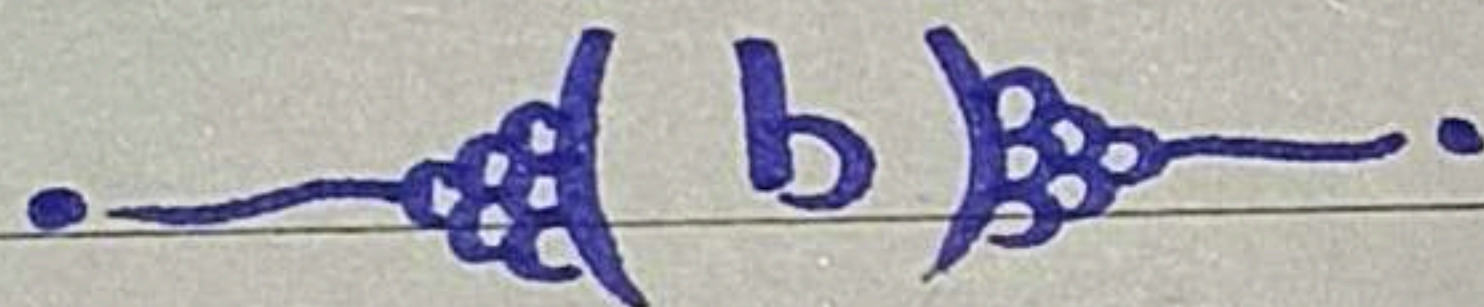
lengths of sunlight and helps in photo-

synthesis to make their own food.



• Leaf Surface

→ chlorophyll is responsible for the green colour of plants.



Ribosomes:-

Ribosomes are organelles found in the cell cytoplasm which are responsible for the protein synthesis.

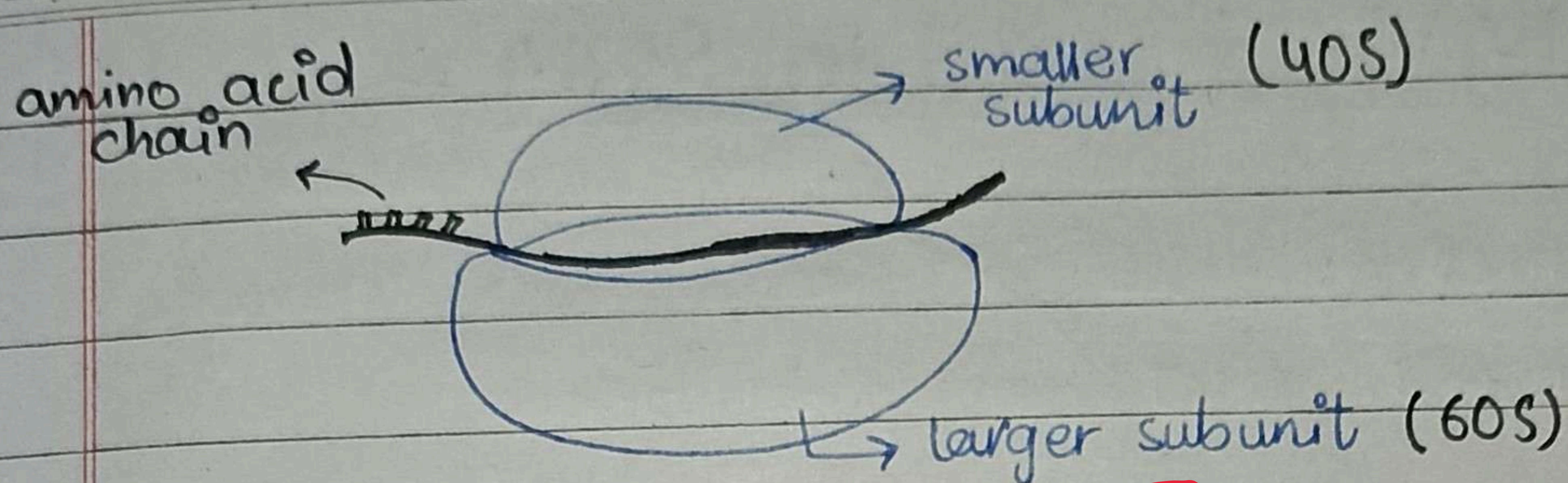
George Emile Palade discovered ribosomes in the cell in **1950s**.

Role of Ribosomes:-

Ribosomes are also known as protein factory of cell. Its main role is to produce protein by using amino acid chains coming from Endoplasmic reticulum.

Day: _____

Date: _____



Parts of ribosomes:-

There are two parts of ribosomes : smaller subunit and larger subunit. The ribosomes present in prokaryotes is **70s** and in eukaryotes is **80s**.

→ S is the Svedburg unit used to represent the size of ribosomal subunits.

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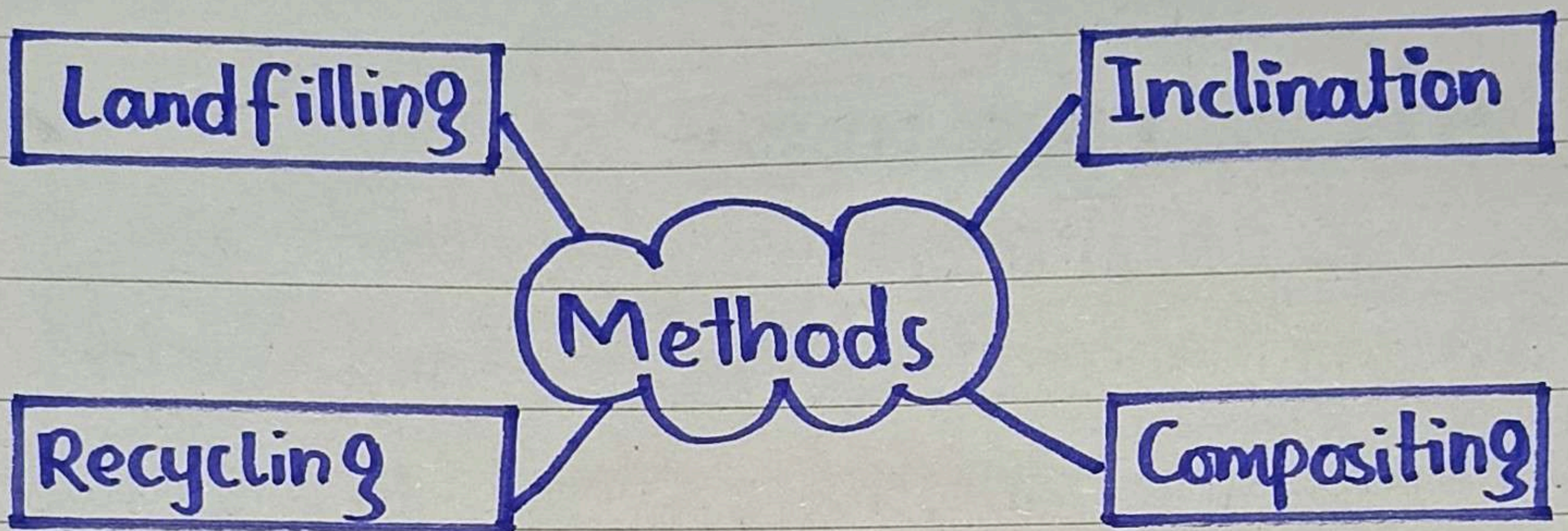
### Solid Waste Management:-

Solid Waste Management is the technique to reduce the detrimental effects of disposal waste. This technique is used to minimize the carcinogenic effects by using different methods.



## Methods used in SWM :-

There are various methods used in Solid Waste Management that are given below:



**Landfilling :-** Landfilling is the process of dumping waste material into the ground which separates the waste material from the environment.

### **Inclination :-**

Inclination is the process of burning waste material in the open area to prevent the soil from long-term effects.

**Recycling :-** Recycling is the most important method of solid waste management. It involves to change the waste product into any other usable product.



Compositing:- Compositing is the process of using biological material e.g: bacteria to remove the disposal waste. Biological organisms consumes the biodegradable product and clean the environment.

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Define the terms:

i) Biofuel:-

Biofuel is the type of fuel which is made from the organic organisms such as biomass, crops, organic wastes and from other organisms.

examples: ether, ethanol etc

ii) Adulteration:-

Adulteration is the process of contaminating food by adding several contaminants in food with own will.

Mostly sellers adulterated food by adding

- water in milk
- dust in wheat
- pebbles in rice and grains.



### (iii) Hydrosphere:-

Hydrosphere is the part of environment and surface area which is covered by the water.

Hydro means  $\rightarrow$  "water"

Sphere means  $\rightarrow$  "surface / area"

Mostly **97%** of the surface area of Earth is covered with water in the forms of lakes, rivers, streams, glaciers, and oceans and fresh water.

### iv) Troposphere:-

Troposphere is the part of atmosphere ranging from surface area of Earth to about **20 km** upward.

- Troposphere is the first layer of atmosphere.
- Mostly events like, cloud formation, precipitation, and planes are flying in this region.

Ozone layer is present in this sphere.

### v) Isotopes

Isotopes are the possible forms of elements having same number of protons but different numbers of neutrons and electrons.



Examples:

There are three isotopes of  
Hydrogen : Protium, deuterium, tritium  
 $H^1$ ,  $H^2$ ,  $H^3$

## Question No # 05

~~Q. 5~~

### Population:-

Population is the number of people living in a particular place. Pakistan is the fifth most populous country in the world. The population of Pakistan increases rapidly despite many economic and socio-political challenges. The population of Pakistan has reached to **244 million**.

### Causes of Population Explosion

There are many prominent causes of population explosion which are not taking heed of anyone. Some causes of population explosion are



Lack of education and awareness, Unemployment, religious misinterpretations, early marriages, non-effective policies of government, and the lack of Political will.

## Measures to control Population:-

It is a very crucial to take step for controlling population of Pakistan. Due to this, there should be a facilities of education especially in rural area. There is a need of providing knowledge about controlling birth rate by using contraceptive material. Population rate can be controlled by launching awareness campaigns, reducing unemployment and taking reduce birth rate policies at ground levels.

• ~~ab~~

## Remote Sensing:-

Remote sensing is the technique of studying the process of what occurring at the Earth's surface and



in environment from the large distance. Remote sensing is mostly used to know about the aircrafts and satellites in the atmosphere.

There are various types of remote sensing which are used in different processes such as :

- electrospectral
- RADAR
- In SAR

## Role of GIS in environmental Science:-

Geographic Information System (GIS) is the computer science which is used to analyze, detect and diagnose the geographic area related to the Earth's surface.

GIS used in environmental science to analyse the natural disasters, clouds, agricultural setups and mapping on the Earth's surface.

It functions in three-dimensional mechanisms.



~ (C) ~

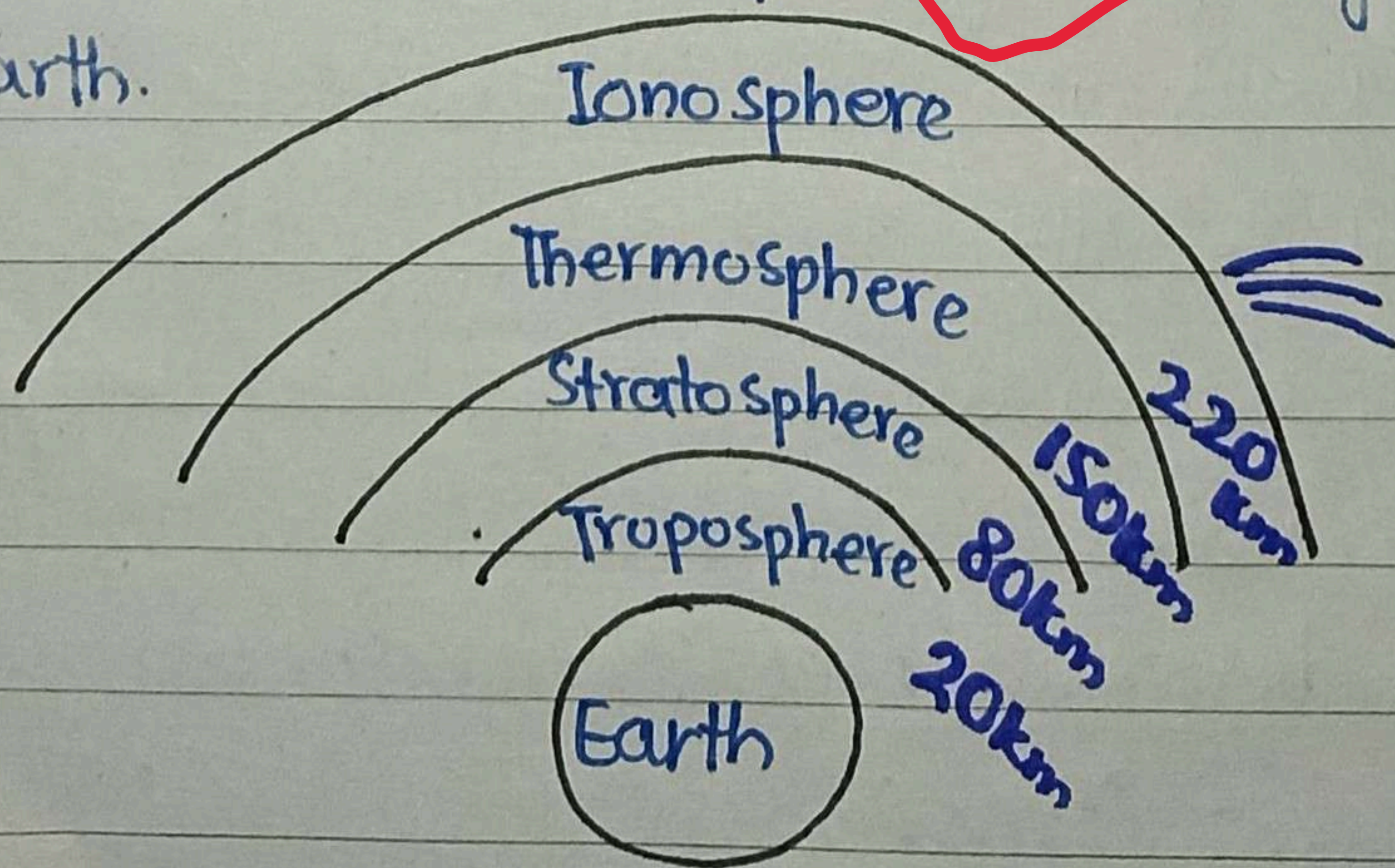
## Atmosphere is the blanket of Earth :-

Atmosphere is the part of surface area that is upward to the Earth's surface. There are many gases, dust, particles are present in atmosphere.

"Atmosphere is the blanket of Earth" means that it wrapped the Earth in different layers that protect the Earth and maintain the temperature.

## Layers of Atmosphere :-

There are four layers of atmosphere which are ~~for~~ responsible of cleaning the Earth from ultra-violet radiations of sun coming towards Earth.





Ozone layer is present in the Stratosphere which protects the Earth from blocking the UV rays.

## Section-2

### Question No #7

~~Q. 7~~

Diameter =  $d = 14 \text{ cm}$   
of sphere

Volume of sphere = ?

$$\therefore \pi = \frac{22}{7}$$

Volume of sphere =  $\frac{4}{3} \pi r^3$

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

$$= \frac{4}{3} \pi \left(\frac{d}{2}\right)^3$$

$$d = 2r$$

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

$$= \frac{4}{3} \pi \left(\frac{d^3}{8}\right)$$

$$= \frac{\pi d^3}{6}$$

$$= \frac{22 \times (14)^3}{7 \times 6}$$

$$= \frac{22 \times 2744}{7 \times 6}$$



Day: \_\_\_\_\_

Date: \_\_\_\_\_

$$V = \frac{392 \times 11}{3}$$

$$= \frac{4312}{3}$$

$$= 1437.3$$

$$V = 1437.3 \text{ cm}$$

The volume of the sphere is  
1437.3 cm.

~~Ex (b)~~

Five friends' total saving = 25,000 Rs.

$$\text{Ratio} = 1:2:3:4:5$$

$$\begin{aligned} \text{Total} &= 1+2+3+4+5 \\ &= 15 \end{aligned}$$

$$\text{Smallest share} = ??$$

$$\text{A's share} = \frac{25000}{15} \times 1 = 1666.6 \text{ Rs}$$

$$\text{B's Share} = \frac{25000}{15} \times 2 = 3333.3 \text{ Rs}$$

$$\text{C's Share} = \frac{25000}{15} \times 3 = 5000 \text{ Rs}$$

$$\text{D's share} = \frac{25000}{15} \times 4 = 6666.6 \text{ Rs}$$

$$\text{E's Share} = \frac{25000}{15} \times 5 = 8333.3 \text{ Rs}$$



Friend A has the smallest share  
in saving is ~~1666.6 Rs.~~

~~Q (C) :-~~

Complete the Series:

(i) 2, 6, 18, 54, 162, 486, 1458

(ii) 3, 5, 7, 11, 13, 17

~~Q (D) :-~~

Triangle with sides =

$A = 5\text{ cm}$ ,  $B = 12\text{ cm}$ ,  $C = 13\text{ cm}$

Find angles = ??

Let :-

$$A = 90^\circ$$

$$= A + A + A$$

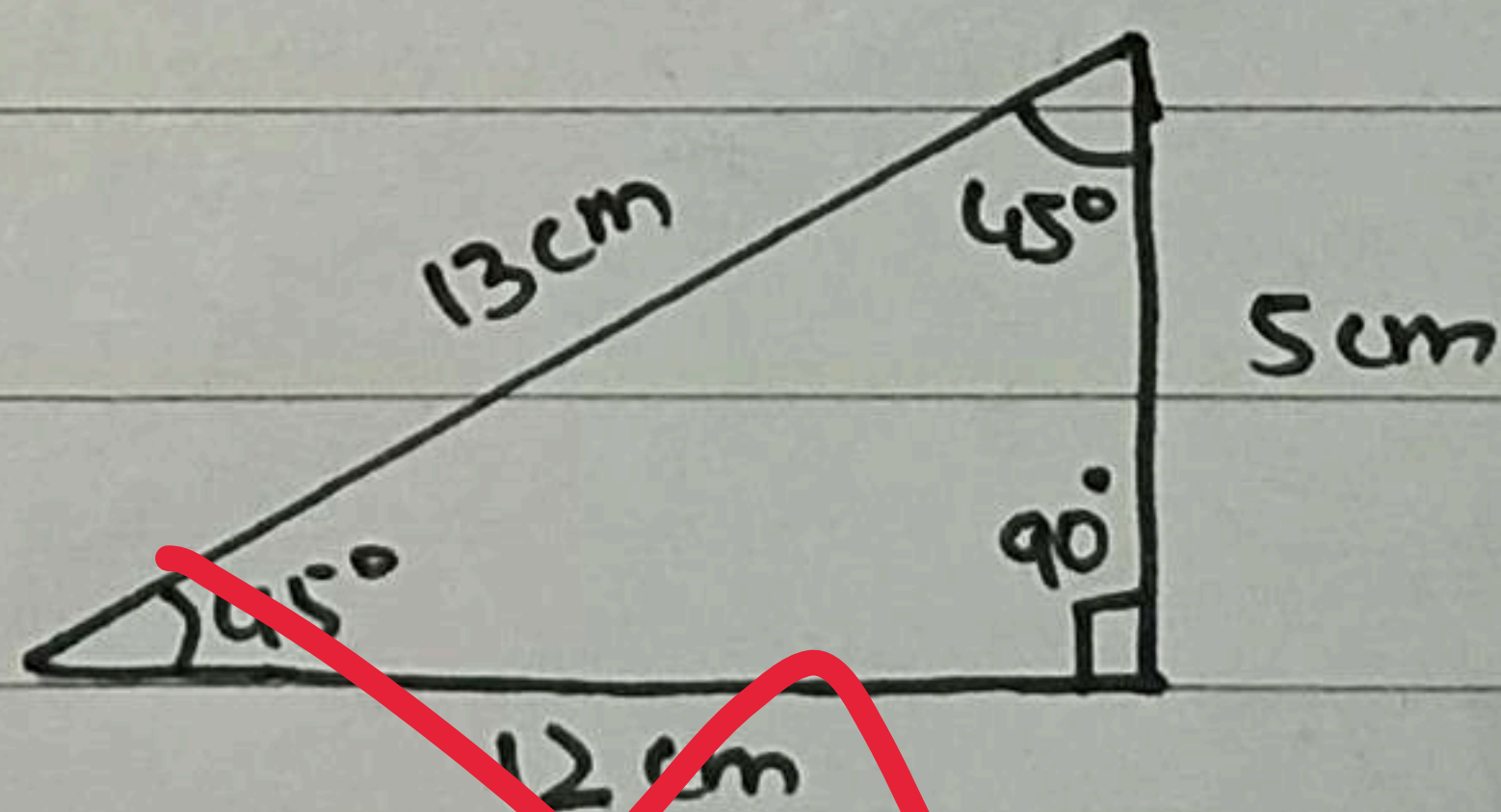
$$= 90 + 2A$$

$$2A = 90$$

$$A = 90/2$$

$$A = 45^\circ$$

The angles of triangle are  $90^\circ$ ,  $45^\circ$ ,  $45^\circ$ .





## Question # 6

~~Q ( )~~

bicycle cover distance  $= S = 36 \text{ km}$

Speed  $= v = 18 \text{ km/h}$

starting at  $= 1 \text{ pm}$

$$S = \frac{v}{t}$$

$$t = \frac{v}{S}$$

$$= \frac{36 \text{ km}}{18 \text{ km/h}}$$

$$= t = 2 \text{ hr}$$

starting from  $= 1 \text{ pm}$

Time  $= 2 \text{ hr}$

$$= 1 + 2$$

$$= 3 \text{ pm}$$

bicyclist reach at  $= 3 \text{ pm}$



(d)

Unscramble these  
terms.

i) STSTAICTS

STATISTICS

ii) LGEBMAR

GAMBLER.

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