READ RIGHT INSTITUTE

Read Right To Write Right

General Science & Ability
MOCK -2024

Question 1 is compulsory. Answer any two from part-II.

Part-I

MARKS: 20

1. Which one can be considered as the unit of distance?

(A) Foot Path **(B)** Heavy year **(C)** Light Year **(D)** None of these

2. Which one is not a planet?

(A) Earth **(B)** Venus **(C)** Moon **(D)** None of these

3. In which direction does the Earth rotate on its axis?

(A) East to West **(B)** West to East **(C)** North to South **(D)** None of these

4. Combining of two non-metal atoms by sharing one or more pairs of electron is called?

(A) Ionic Bond (B) Covalent Bond **(C)** Metal Bond **(D)** None of these

5. Which part of a body will be affected mainly by Fluoride Pollution?

(A) Brain **(B)** Liver **(C)** Teeth **(D)** None of these

6. How can we symbolically write the Ozone Gas?

(A) O_2 **(B)** O_3 **(C)** CO_2 **(D)** None of these

7. Which of the following is not an electromagnetic wave?

(A) Sound waves **(B)** Radio waves **(C)** Light waves **(D)** None of these

8. For what terminology is the abbreviation GPS being used globally?

(A) Geo Pakistan System **(B)** Global Positioning System **(C)** Google Path System **(D)** None of these

9. Plotting of the vibrations caused by an earthquake on a paper is called?

(A) Photograph **(B)** Earthograph **(C)** Seismograph **(D)** None of these

10. Which method may not be considered as a food preservation method?

(A) Freezing **(B)** Irradiation **(C)** Sleeping **(D)** None of these

Part-II

MARKS: 40

Q 2: (a) What do you know power house of the cell. (5)
(b) Differentiate between renewable and non-renewable sources of energy. Briefly explain wind energy, solar energy and biofuels. (5)
(c) What is a Earthquake? What is the role of tectonic plates in Turkiye Earthquake? Explain briefly. (5)
(d) Discuss various methods used for food preservation. (5) **(20)**

Q 3: (a) Discuss Vaccination, types of Vaccines, their side-effects and effectiveness. (5)
(b) Define smog. Differentiate between industrial and urban smog. (5)
(c) Write a note on comparison of plant and animal cell. (5)
(d) What is Solid Waste? Discuss the mechanism of least preferred step of Solid Waste Management. **(5)** **(20)**

Q4:(a) Define the term Water Pollution. What indicators are used to measure the quality of water? (5)
(b) Write a note on solar and lunar eclipse. (5)
(c) Discuss the possible negative effects that Pakistan may face due to Global Warming and Climate Change. What steps may be helpful to control the climate change? (5)
(d) What are the bad tropospheric reactions. Discuss their effects on human health. (5) **(20)**

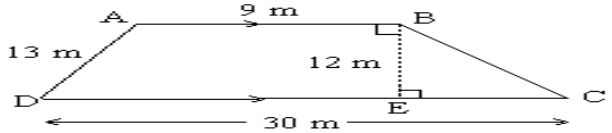
Q5:(a) What do you understand by the term Remote Sensing? Write its basic principle. Give its Important applications. (5)
(b) Write note on Vitamin C and Vitamin B Complex. (5)
(c) Differentiate between natural and artificial satellites. How artificial satellite are causing Space pollution. (5)
(d) Explain Artificial Intelligence. What do you understand by the term Robotics? (5) **(20)**

Attempt only two section Total Marks 40:

Section (A)

1. **At 9:00 am train T left the train station and two hours later train S lefts the same station on a parallel track. If train T averaged 60 Km/hour and train S averaged 75 Km/hour until S passed T. at what time did S pass T?(5)**

2. **A plot of land is in the shape of a trapezium whose dimensions are given in the figure below:**



Hence the perimeter of the field is? (5)

3. **If $ 4,500 was invested in a bond fund when the price per share was $ 9 and $ 3,000 was invested in the fund when the price per share was $ 10, what was the average (Arithmetic Mean) price per share purchased?(5)**
4. **P,Q,R,S,T,U and V are seven friends and are sitting in a circle facing the center of circle**
   a) **V is second to the left of S and is the neighbor of T and U**
   b) **S is not neighbor of R and T**
   c) **P is neighbor of Q and R**

   What is the position of R. (5)

Section (B)

5. **Ricardo lives 4 Km due west of Pat's house. Ann lives 6 Km due north of Pat, s house and 4 Km due west of David's house. What is the straight line distance in Kilometers from Ricardo's house to David's house?(5)**
6. **If an equilateral triangle and a square have the same perimeter, what is the ratio of the length of the sides of the equilateral triangle to the lengths of the sides of the square?(5)**
7. **What are the Supplementary and Complementary angles also define the different Quadrants on X and Y Coordinates with examples.(5)**
8. **In a mixture 60 liters, the ratio of milk and water 2:1. If this ratio is to be 1:2, then the quantity of water to be further added is? (5)**

Section (C)

9. **Today is Ahmad's 12th birthday and his father's 40th birthday. How many years from today will Ahmad's father be twice as old as Ahmad is at that time?(5)**
10. **If 3 men or 6 boys can do a work in 20 days. How long will it take 6 men and 8 boys to complete the same amount of work? (5)**
11. **If U= {1, 2, 3, 4, 5, 6, 7, 8}, A = {4, 5, 6} and B = {5, 6, 8}. then prove the De Morgan's Law of Union $(A \cup B)' = A' \cap B'$ and Intersection $(A \cap B)' = A' \cup B'$. (5)**
12. **An accurate clock shows 8 o'clock? In the morning, through how many degrees will the hour hand rotates when the clock shows 2 o'clock in the afternoon? (5)**

SYED JAWAD HAIDER

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(1)

PART-I

1- (C) light year

2- (C) Moon

3- (B) West to east

4- (B) covalent

5- (C) Teeth

6- (B) O_3

7- D (None)

8- (B) Global positioning system

9- (C) Siesmograph

10- (A) Freezing

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PART-II

ANS Q#2

(A)

What do you know power house of the cell.

"Mitochondria" is called the Power house of the cell because of following reasons:

*) help in the process of cellular respiration

*) Through glucose and oxygen, it produces energy-rich "Adenosine-triphosphate (ATP)"

*) Mitochondria are tiny organelles cells involved in releasing energy from food.

Structure and function:

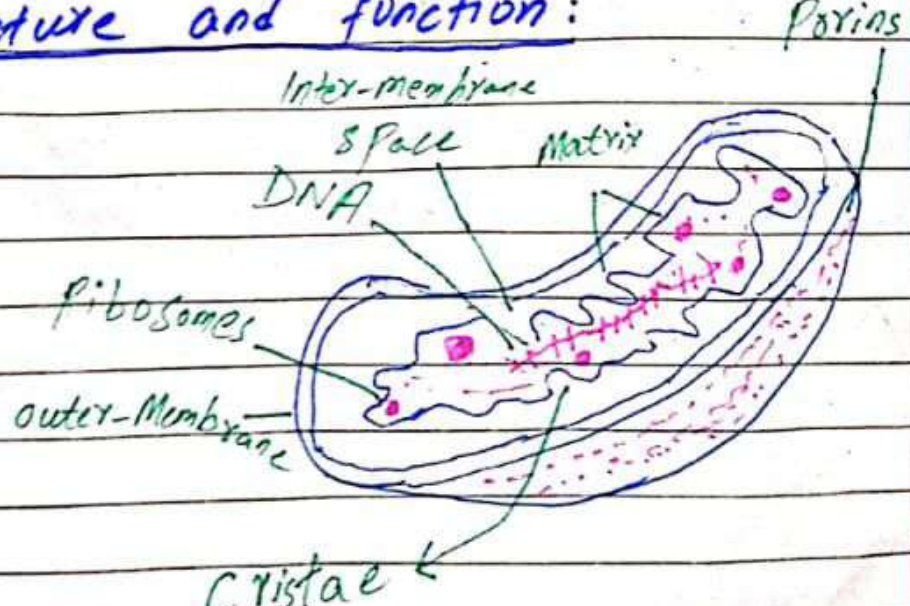

Fig: Label diagram of mitochondria

*) In mitochandria, cellular respiration occurs through glucose and oxygen:

glucose + oxygen ⟶ carbon dioxide + water

$C_6H_{12}O_6 + 6O_2 \longrightarrow 6CO_2 + 6H_2O + \{ATP\}$

*) The classic role of mitochandria is an oxidative phosphorylation

*) Through oxidative process, mitochandria generates (ATP) that is used as the primary energy source for human bodies growth.

(4)

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Q2 [b]

Differentiate between renewable and non-renewable sources of energy. Briefly explain wind energy, solar energy and biofuel.

Renewable Energy Source	Non-Renewable Energy source
*) Can be renewed, (or) reused. (air, water)	*) Can't be renewed (or) reused. (Fossil, Biogas)
*) Long term sustainable resources.	*) Highly exhaustible resources.
*) Environmentally friendly as carbon-emission is low	*) Not an environmentally friendly, and emission is high.
*) Pollution free resources.	*) Pollution contributed resources.
*) Available in unlimited quantity.	*) Available in limited quantity.
*) Production quantity is less.	*) production quantity is high.
*) Maintenance cost is high.	*) Maintenance cost is comparative low.

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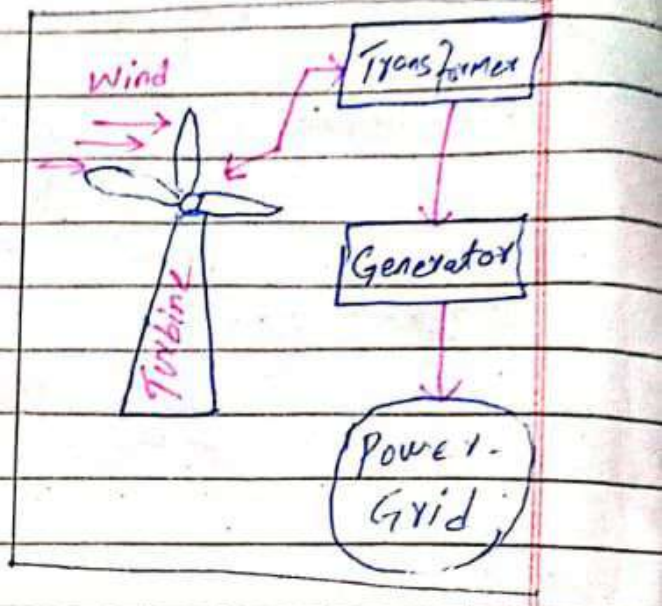
I- Wind Energy:

*) Wind is used to generate energy.

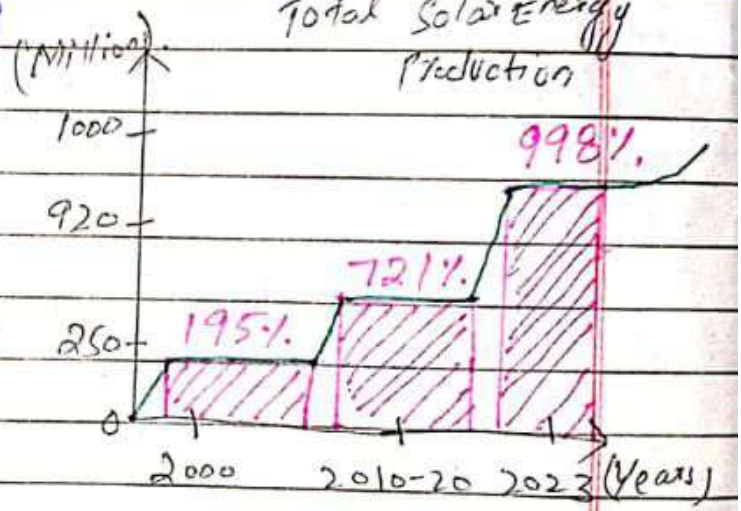
*) Sources of wind energy are:
- ⇒ Land-based
- ⇒ Distributed
- ⇒ Of-shore



II- Solar Energy:

*) Generated energy using solar heat and light.

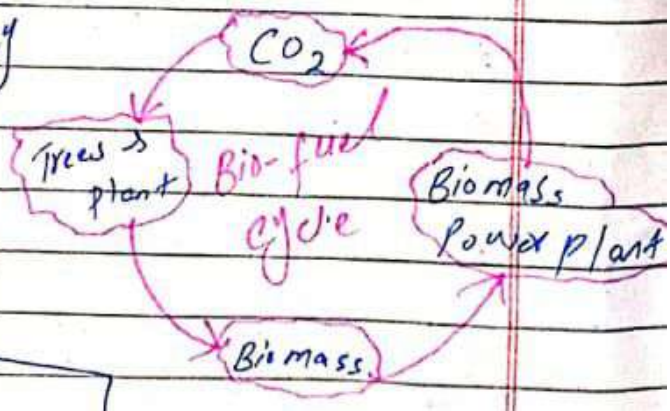
*) Used photovoltaic system mechanism.

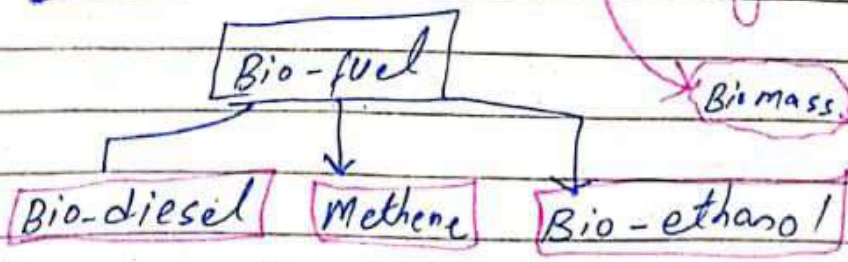


III- Bio-Fuel:

*) Energy generated by using bio-mass.

*) TYPES





*) Used the mechanism of fermentation.

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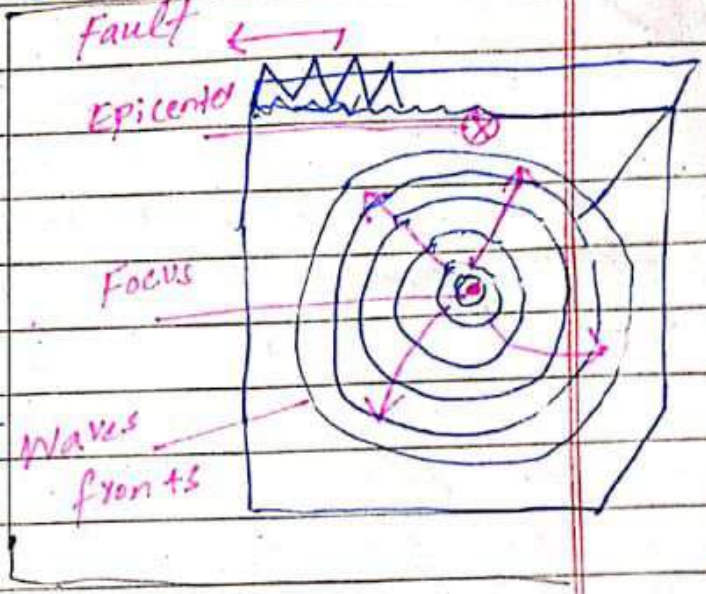
Q2: [C]

C: What is earthquake? What is the role of tectonic plates in Turkiye earthquake?

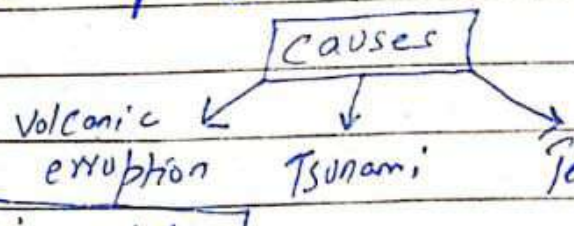
Introduction to earthquake:

*) sudden shaking of the ground by seismic waves through earth's rocks.

*) caused by Tectonic plates, and volcanic erruption.



Causes of earth quakes:



Tectonic-plates

*) when tectonic plates converge, they realsed seismic waves.

Volcanic erruption & Tsunami

*) High volume of volcanic erruption triggor earth-quakes.

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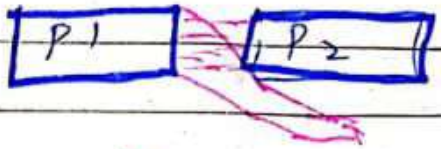
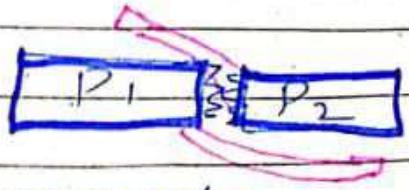
Role of tectonic plates in Turkiye earth quake:

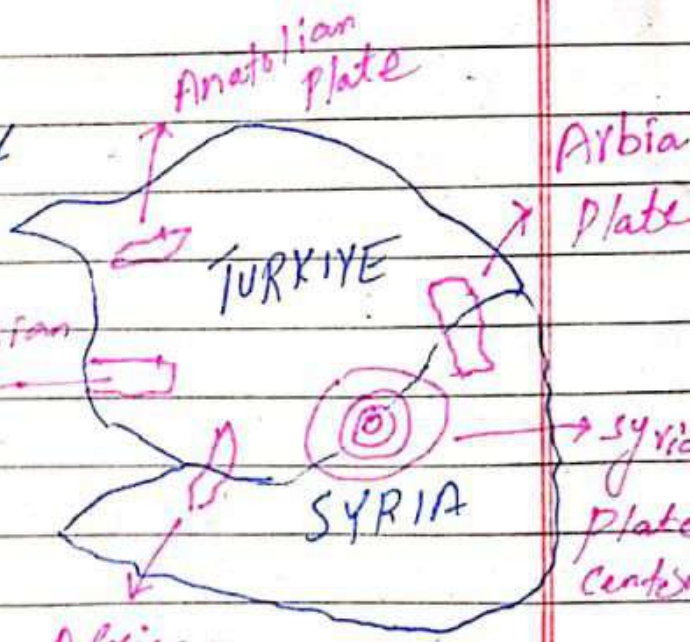
1) Divergent

2) convergent 

3) Transform. 

*) These tectonic plates movements trigger earth-quakes.

*) Turkiye is located on euro-Asian and anatolian Tectonic plates.



*) All These Tectonic Plates trigger earth quakes in Turkiye, Syria, and Yemen region.

*) Because of the movements of These tectonic Plates, Turkiye faces earth quake in 2023.

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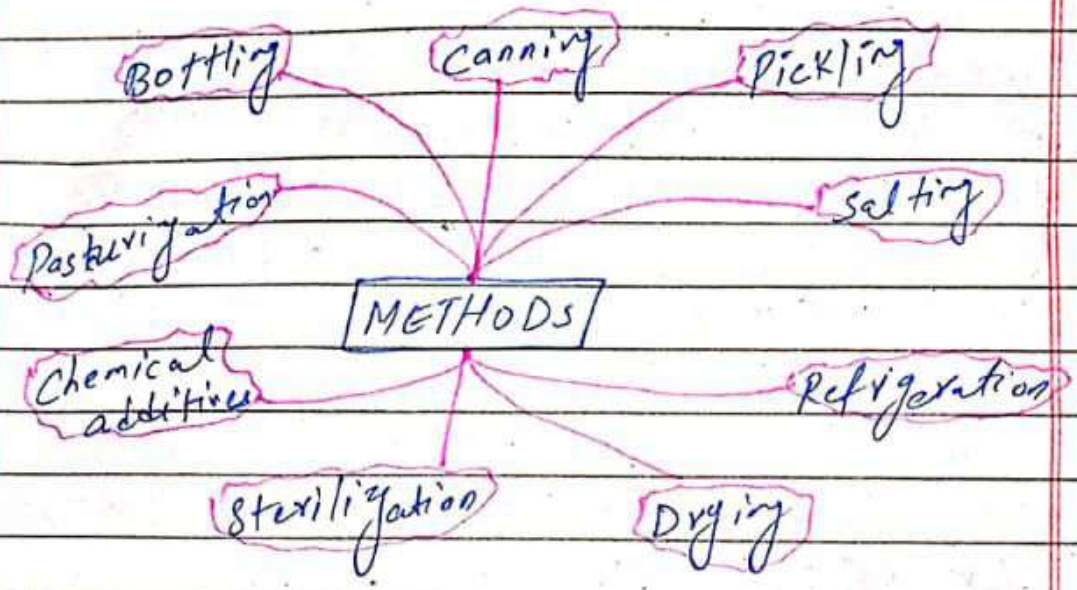
ANS Q#2 [d]

d: Discuss various method used for food preservation.

Various method for food-preservation:



Pickling:
Preserving food by using anaerobic fermentation.

Salting:
Preserving foods using salting such as meat.

Smoking:
Preserving using smoking to prevent spoilage.

Canning:
Preserved by heating the food items at high temperature.
Examples are: milk, wine, coffee

Bottling:

Preserved by sealing the food items into bottles and heating at high temperature.

Pasteurization:

Process of heating food item below the boiling points.

Refrigeration:

Preserved food items by storing them in refrigerator at low temperature.

Sterilization:

Food items boiled at 100°c to remove microbial growth.

Drying:

Preserved food items by drying them to prevent food spoilage.

Chemical additives:

Substances are added to enhance the preservation of food items.

Example:

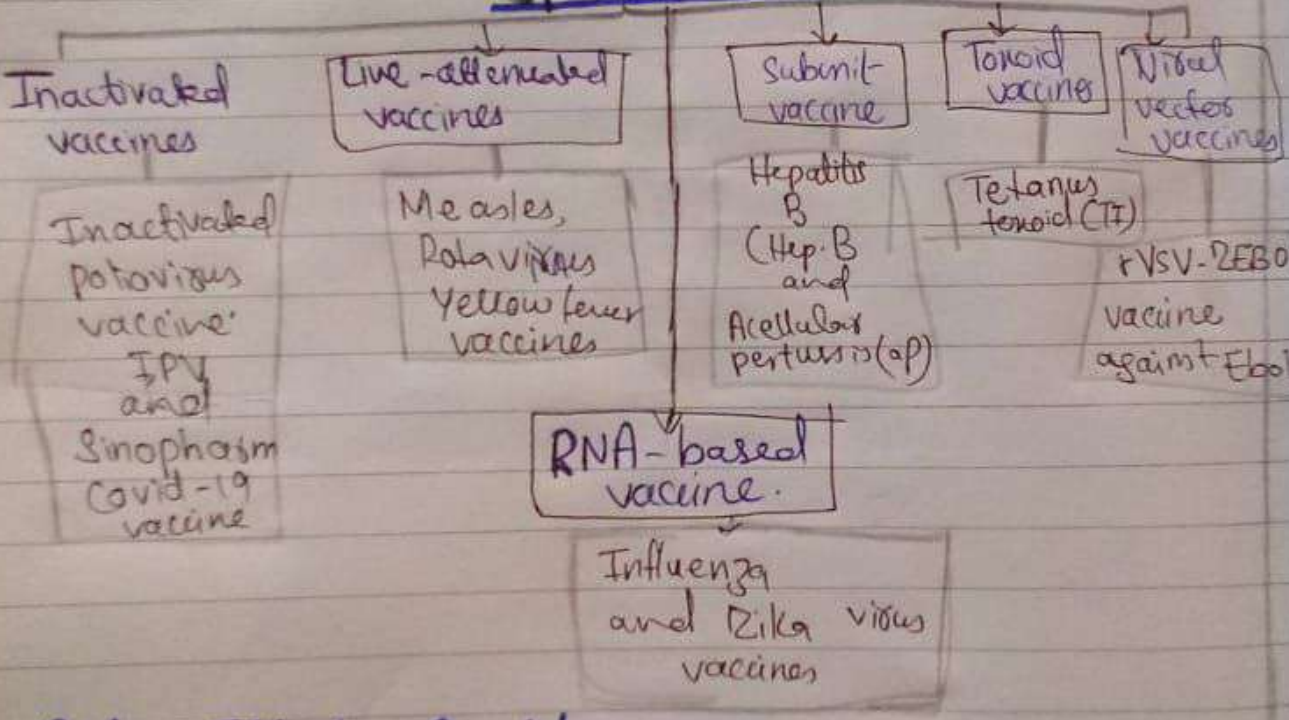
* Ascetic Acid, lactic Acid
* Nitrate to preserve colors

Q3
part : a

Vaccination:

It is a process in which certain antigens or live or attenuated pathogens are injected in body or given orally to protect the body from the harmful consequences of upcoming disease. Through vaccination human body acquire adaptive immunity against pathogen and chances of disease occurring get lesser.

Types of Vaccine



Side Effects Of Vaccine

Majority of the people do not have any serious side effects. However, ~~mid~~ some may show mild side effects which include headache, mild-fever, fatigue, pain, swelling and redness at the place of shotting vaccine. Serious side effects may occur in one in million which comprising allergic reactions like rashes over body or difficulty in breathing.

Effectiveness of Vaccine

Effectiveness of a vaccine is the extent to which a vaccine provides a beneficial result under real-life conditions. Vaccine effectives is measured by comparision of vaccinated and non-vaccinated people and the health outcomes between them.

$xx = xx$

Q3 Pait b

SMOG

Smog is a kind of air pollution. The word "smog" is a mixture of smoke and fog

Characteristics	Industrial Smog	Urban Smog
1- Climate	It forms as a result of cool and humid climate	It forms as a result of warm and dry climate
2- Pollutants	Sox, particulates	Nox, O3, etc.
3- Major Source	Industrial and household burning of coal and oil	Motor Vehicles
4- Major Effects on human	Irritation of lungs and throat	Eye irritation
5- Times when worst episodes occur	Winter months (especially in early morning)	Summer months (maximum effect arand noon)

Q3

Part: C

Comparision of plant and Animal cell

Animal Cell	Plant Cell
1- Presence of cell wall	
Animal cell does not have cell wall.	cell wall is present in plant cell.
2- Vacuole	
Animal cell has small ~~fewer~~ more vacuole in number	While plant has larger vacuole. (fewer in number)
3- Chloroplast	
Animal cell lacks, the membrane bound organelles, chloroplast	However plant cell has chloroplast.
4- Size of cell	
Animal cell is smaller in size	on other hand, plant cell is larger in size.
5- location of Nucleus	
Nucleus is centrally located	Nucleus is located on side ways
6- Carbohydrate storage	
Carbohydrate is stored in the form of glycogen	Carbohydrate is stored in the form of starch.

→ continue

Part: C continue.

7- **Lysosomes**

Lysosomes, cell organelle, are rarely present.

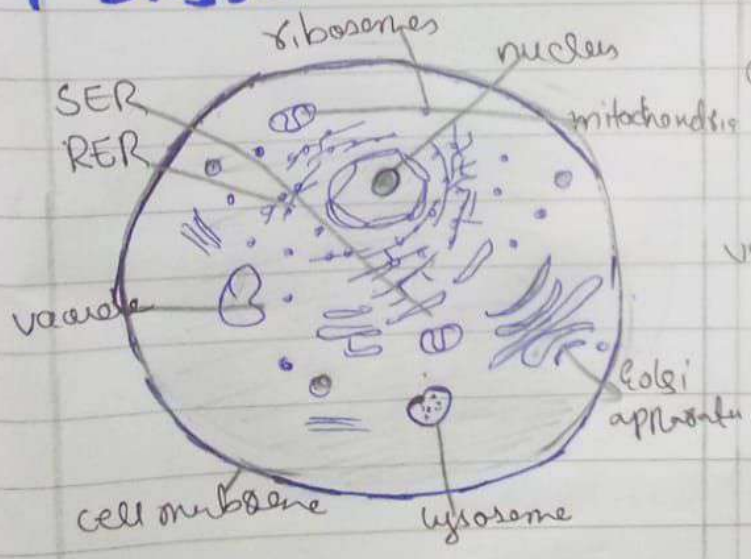
Lysosomes are definately present in plant cell

8 **Plasmodesmata**

Plasmodesmata, microscopic channels, are not present in animal cell.

Nonetheless, plasmodesmata are present in plant cell.

9 **Diagram**



Key: SER Smooth Endoplasmic Reticulum
RER Rough Endoplasmic Reticulum

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SECTION-2 (Ability)

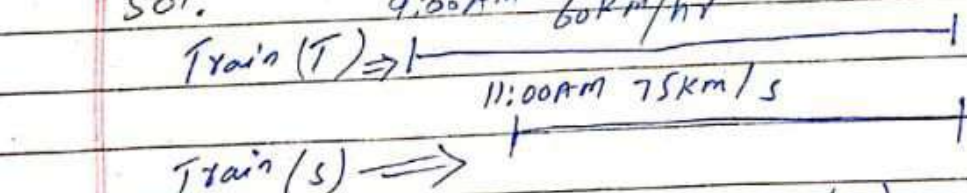
Section-A

1: Given Information:

Train T left station at: 9:00 AM
S left station after: 2 hrs
= 2(60)
= 120 minutes
Train(T) average speed: 60km/hr
Train (S) average speed: 75 km/hr

Require:
At what time (S) Pass (T) = ?

Sol:



Minus the Train(S) & Train (T) speed velocity
speed velocity = 75 - 60
= 15 km/hr

using Formula: $S = vt$ —— (1)
S ⇒ Distance
V ⇒ Speed / Velocity
T ⇒ Time

Putting value in eq(1):
$120 = 15 \times t$

END

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(11)

$\frac{120}{15} = t$

$t = 8hrs$

Now add the time train (S)

$t = 11:00 + 8hrs.$

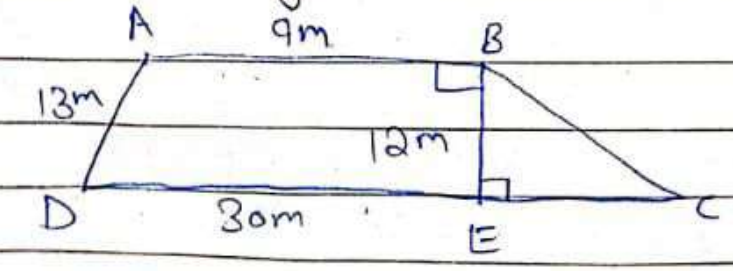
$= 19hrs$

$= 7hrs$ at Night — Answer

Hence, Train (S) pass the train (T) at 7PM (Night).

[2]

Information given:



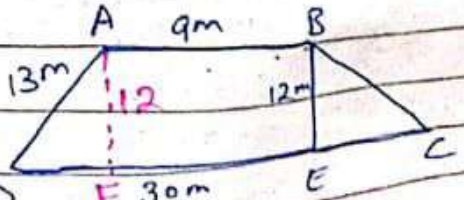
Required:

Perimeter of the field = ?

Solution:

using Pythagorus Theorem

$(Hyp)^2 = (Base)^2 + (Perde)^2$



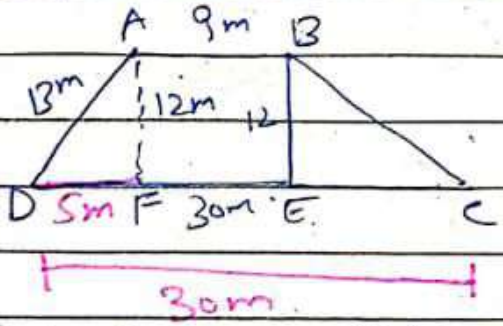
By solving ΔADF

$(13)^2 = (Base)^2 + (12)^2$

$169 = Base^2 + 144$

$\sqrt{(Base)^2} = \sqrt{25}$

$B = 5m$ $\therefore \Delta ADF = 5$ meter



30m

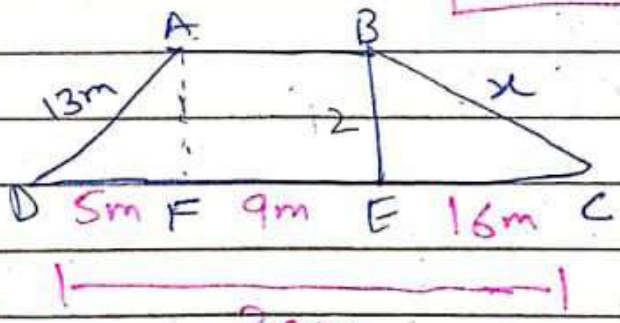
Now deducting DF and FE values

$AB = 9m$

$DF = 5m$

so $AB + DF = 14m$

Hence $30m - 14m =$ **16m**



30m

using phygoras theorem to solve ΔBEC

$(hyp)^2 = (Base)^2 + (Perd)^2$

$x^2 = 16^2 + 9^2$

$\sqrt{x^2} = \sqrt{400}$

$x = 20$

Now again drawing;

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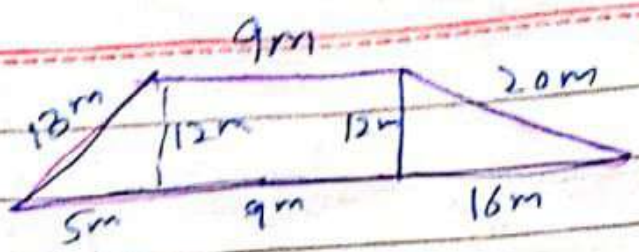

Perimeter = 13 + 9 + 20 + 36

= 78 meters is the perimeter of field.

[3]

Given Information:

Invested in bond when price per share was $9 = $4500

Invested when share price $10 = $3000

Required:

Average (mean) price per share purchased = ?

Solution:

∴ Avg formula = $\frac{\text{Total price}}{\text{No. of share}}$

No of share when it was $9:

No of shares = $\frac{4500}{9}$ = 500

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No of share when it was 10$.

$= \frac{3000}{10} = \$300$

Using formula, total price is

$= 4500 + 3000$

$= 7500$

Total shares $= \$500 + 300\$$

$= 800\$$

Putting values in formula:

Avg price per share $= \frac{7500}{800}$

$= \$9.37$ price per share

Answer

DATE: __/__/__

15

[4]

Given Information:

Total friends = 7

Names = P, Q, R, S, T, U, V

Position = circle

Conditional rules:

⇒ V is second to left of S and neighbor of T & U

⇒ S is not neighbor of R and T

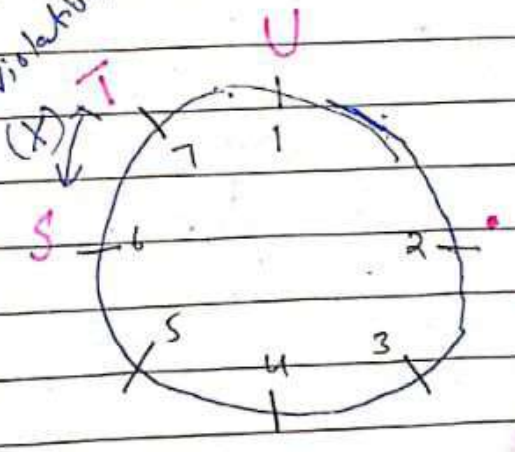
⇒ P is neighbor of Q and R

Require:

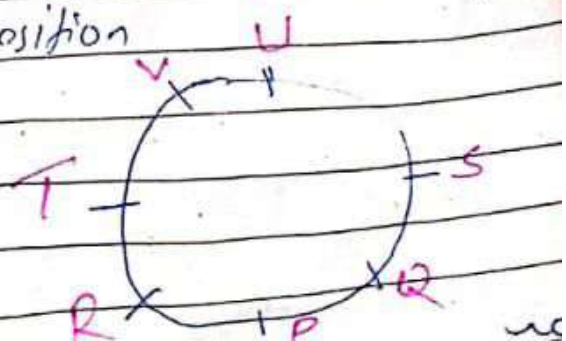
Position of R: ?

Solution:

⇒ Drawing "V" position



⇒ Drawing "S" position



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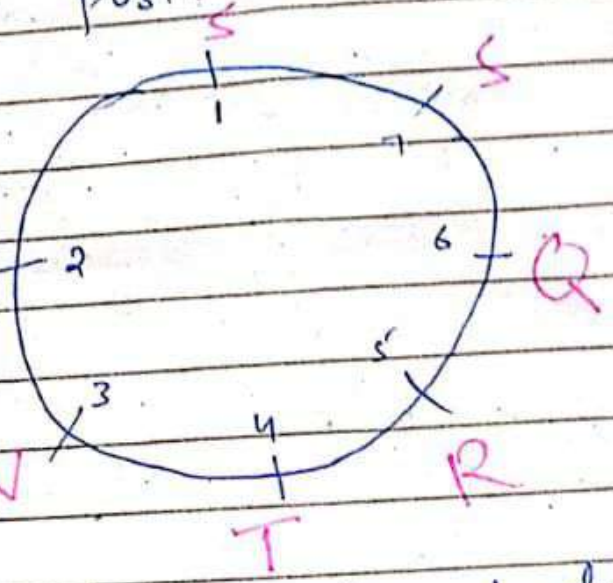
Now final positions



Hence R position in between TQ at 5th place.

SECTION (B)

[5]

Given information:

Ricardo lives 4km west of Pat's house
Ann lives 6 km north of Pat's house and 4km west of David's.

Required:

Ricardo to David's house distance

Solution:

→ Next

~~16~~ (17)

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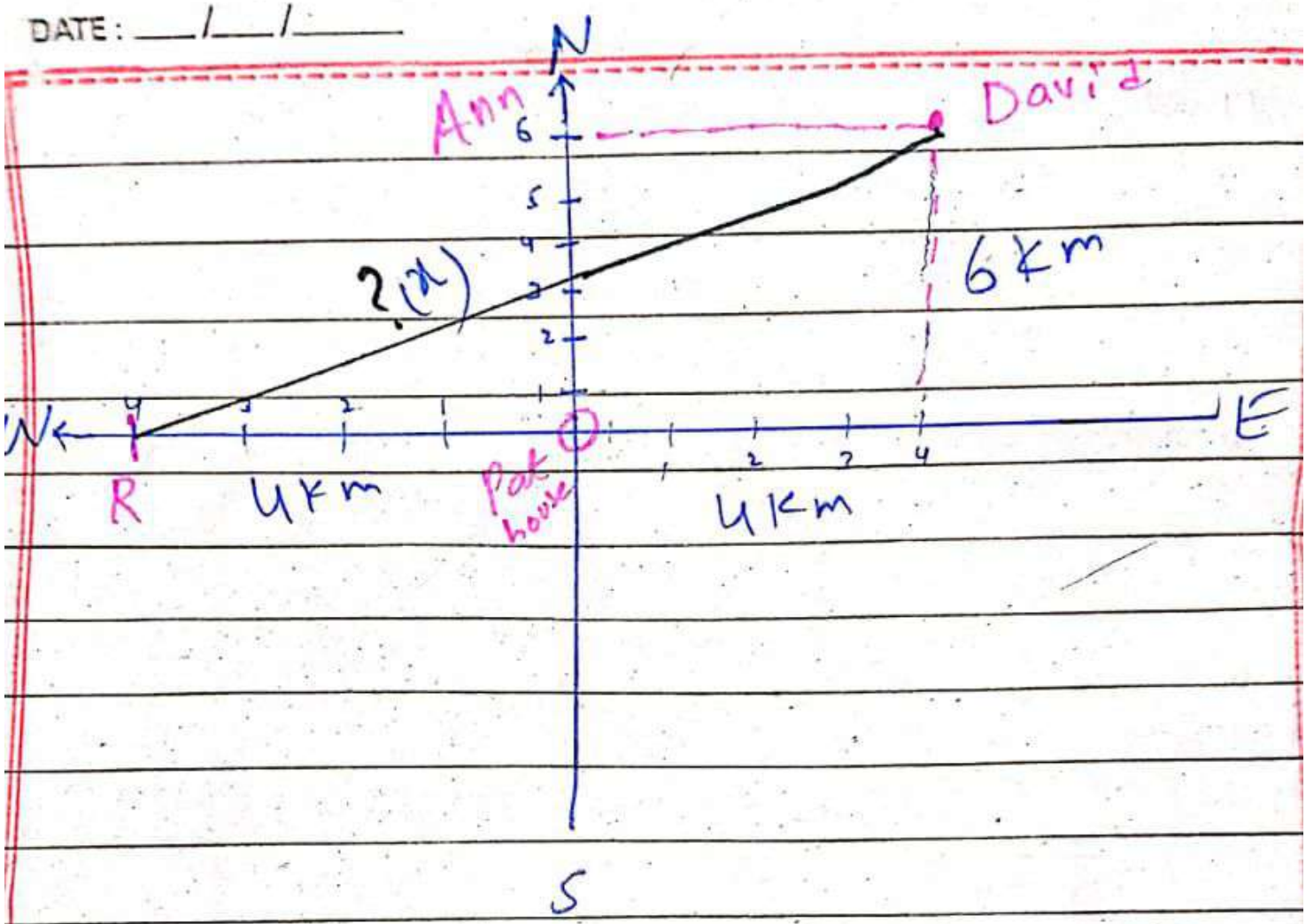

using pythagoras theorem:

$(\text{hypotenuse})^2 = (\text{base})^2 + (\text{perp})^2$

$x^2 = (8)^2 + (6)^2$

$x^2 = 64 + 36$

$\sqrt{x^2} = \sqrt{100}$

Answer: $x = 10\text{km}$ distance between Ricardo and david's house

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(18)

[6]

Given Information:

equilateral triangle and square = same perimeter

Required:

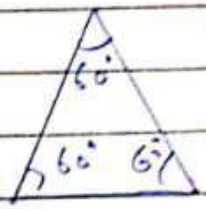
Ration of equilateral triangle and length of sides of square

Solution:

Equilateral Triangle:

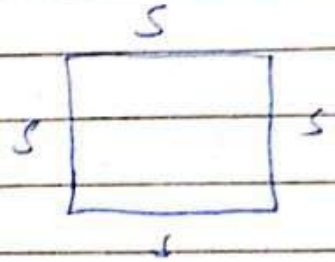
perimeter formula:

$P = 3a$

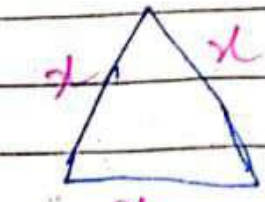


Square:

perimeter = $4a$

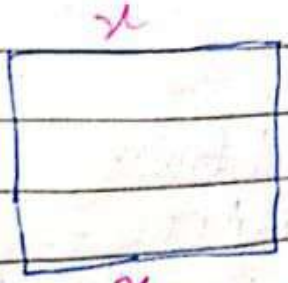


Now having same perimeters:



$P = x + x + x$

$P = 3x$



$P = x + x + x + x$

$P = 4x$

So = $3x : 4x$

3 : 4 Answer

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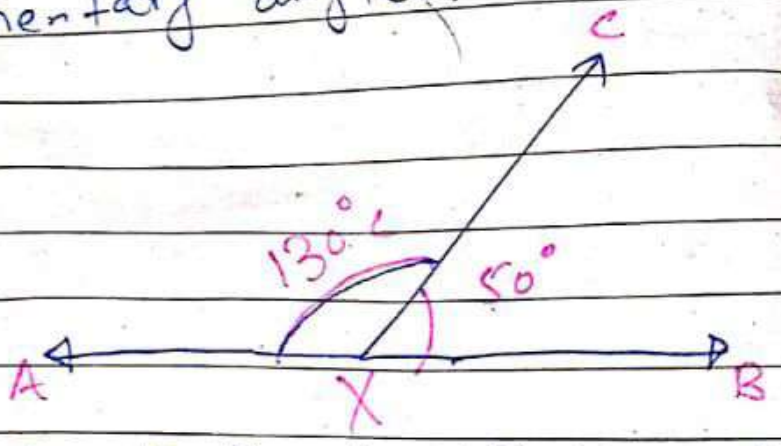
(7)

Supplementary angles:

If sum of two angles is 180° degree Then it is called supplementary angles:

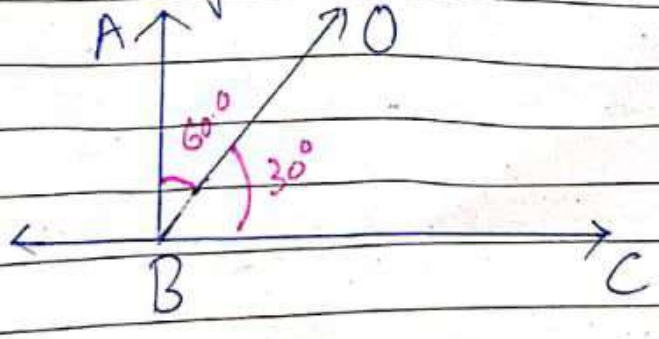


$\Delta AXC = 130^\circ + \Delta XBC = 50^\circ$

$\Delta Angle = 180^\circ$

Complementary angles:

If sum of two angles in 90°c Then it is called complementary angles.

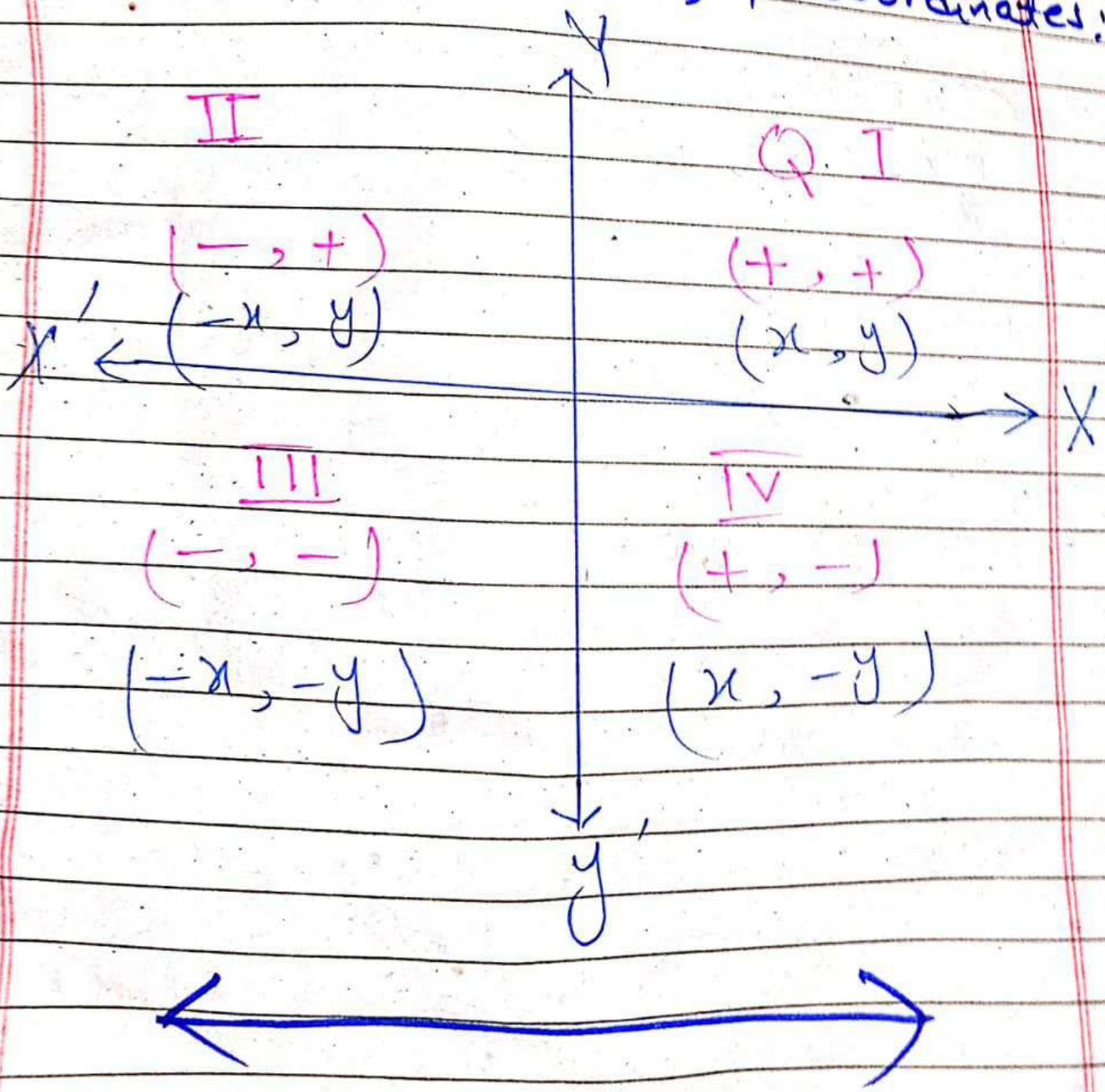


$\Delta ABO = 60^\circ + \Delta BCO = 30^\circ$

$\Delta Angle = 90^\circ$

DATE: __/__/____

Quadrants of X, Y coordinates:



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[8]

Given information:

Mixture = 60 liters

Milk and water = 2:1

Require:

Quantity of water to be added = ?
when ratio (1:2)

Solution:

Ratio formula = $\frac{\text{Ratio}}{\text{sum of Ratio}} \times$ Total mixture

Now ratio of

Milk : water

2 : 1

Milk ratio = $\frac{2}{3} \times 60 = 40$ liters

water ratio = $\frac{1}{3} \times 60 = 20$ liters

Now let suppose x further added in water

$40 : 20 + x = 1 : 2$

$\Rightarrow \frac{40}{20+x} = \frac{1}{2} \Rightarrow 80 = 20 + x$

Answer $x = 60$ liters need to be added.

END