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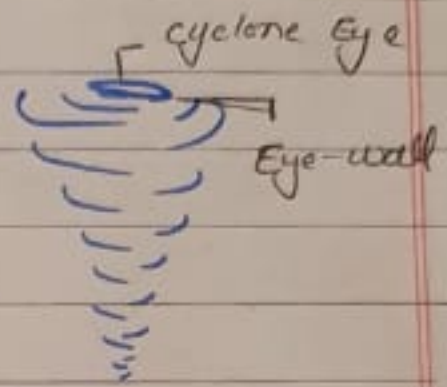
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Question number 3

→ Part A:

What is a cyclone?

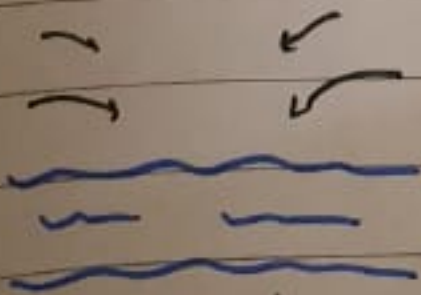
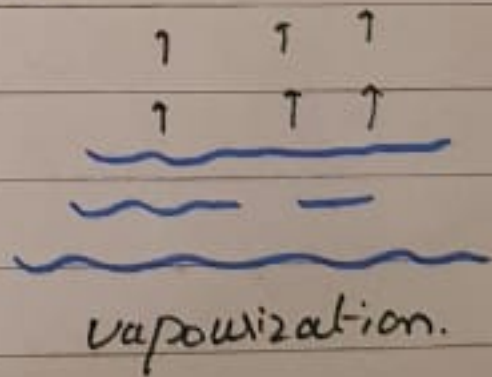
Cyclon is a spiraling waves of clouds and vapors formed on sea surface due to three factors



- 1: High temperature causing evaporation
- 2: Presence of different temperature
- 3: Earth rotation

Process explanation: When vapours are raised and formed due to high temperature, it moves from higher density to lower density.

The vacuume is then filled with higher density particles coming from cold areas



High density particles

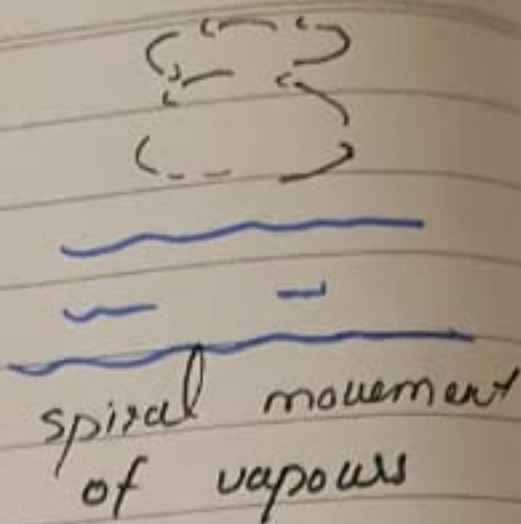
The rotation of earth makes the particle move in spiraling motion



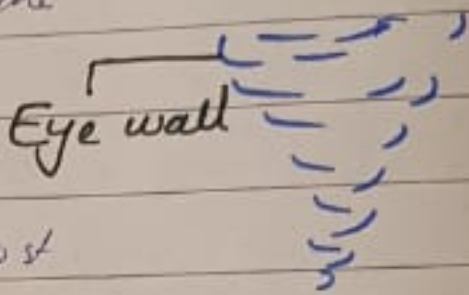
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Consequently, the spiral movement forms a cyclone which is continuously charged with energy from vaporization and suction effects.



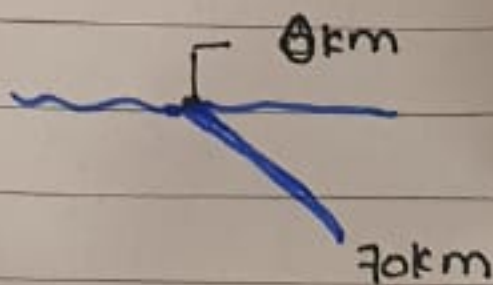
In which part of cyclone winds are the strongest and destructive? Eye wall of the cyclones are the strongest with high pressure and the most destructive.



### → Part B:

What are shallow focus and deep focus?

The focuses are set to determine the range and depth of earthquake in the crust.



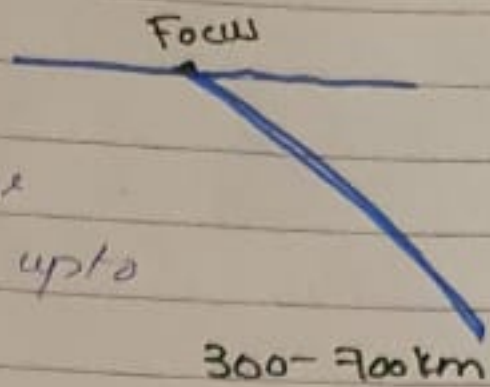
### Shallow focus:

Earthquake with range in the depth of earth-crust upto 70 km is said to be shallow focus



## Deep Focus:

The focus of earthquake more than or greater than 300 km upto 700 km is called deep focus.



## What causes earthquake?

Following are few causes of earthquake.

- 1: Convergence of plate tectonics
- 2: Divergence of plate tectonics
- 3: Internal pressure from earth crust.
- 4: Volcanic eruption.

## What was the recent magnitude of earthquake in Morocco?

The recent magnitude of earthquake in Morocco was 6.5 on Richter scale.

## → Part C:

### Write danger zones:

The zones caused by malaria are present mainly in



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standing water and unhygienic area. The spread of malaria is caused through mosquitoes from people to people.

Primary causes of Dengue Fever:

- 1: Standing water.
- 2: Open food
- 3: Poor waste management

Preventive measures

- 1: Standing water should be dumped with soil and any standing water occurrence should be avoided
- 2: Mosquito net should be used during virulent seasons.
- 3: Food items must be covered
- 4: Water filters should be used or water should be boiled before using.

→ Part D:

Ionic bonds:

The bond is formed when any atom loses or gains an



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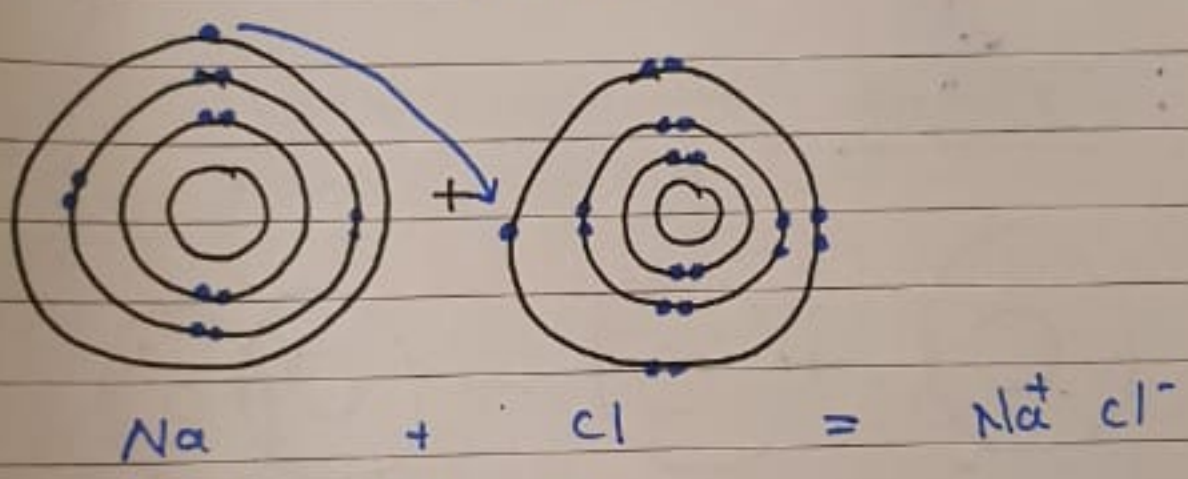
electron during chemical composition.

Two charged are formed on the process

1. Positively charged atom: when an atom loses an electron, it is charged with positive sign.

2. Negatively charged particle: when an atom gains an electron, it is charged with negative charge.

Example: chemical composition of NaCl



When an electron is donated from Na, chlorine accepts the electron, the former securing positive charge and the later securing negative charge.

Covalent bond:

In such bonds, electrons are not donated completely but shared between two or more atoms.



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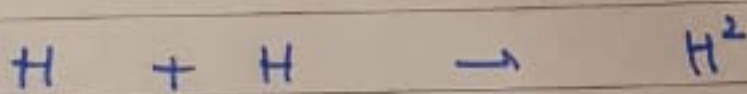
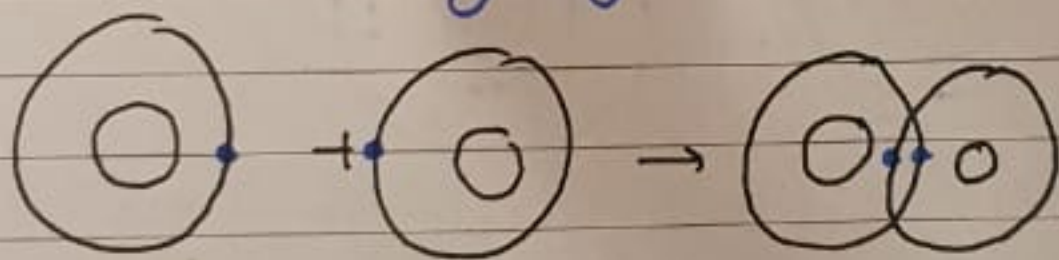
They do not have any charge allocated to them. Covalent could be of many many types. The electrons shared between the atoms also varies.

**Single covalent bond:** when the atoms share single electron.

**Double covalent bond:** when two electrons are shared between the atoms.

**Triple covalent bond:** when three electrons are shared between the atoms.

Example: Bonding between hydrogen atoms:



The bonding between two hydrogen atoms are covalent bond when each hydrogen share single electron thus becoming single covalent bond.

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## Question number 4:

→ Part A:

What are the causes of land pollution?

Land pollution is the waste caused by human activities. With the growing consumption and bubbling population, land pollution has become a serious concern.

### Causes of land pollution:

Among most contributing factors, few are articulated below

1: Industrial revolution: Industrial revolution was the leading <sup>factor</sup> towards land pollution. Easy availability of resources and luxuries created a milieu of unbridled consumerism. Speedy productions in return paved the way for waste materials.

2: Non-biodegradable materials: Factories and industries are less concerned towards the health of



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earth. Resultantly, - those products were produced which would take millions of years to decompose. Example, plastic and waxer. This causes serious land pollution.

### 3: The culture of consumerism:

Consumerism has become so intense that even the useful materials are not recycled in societies. They prefer purchasing new items instead of saving and recycling the old ones.

4: Poor legislation: Owing to poor legislation, there is no hindrance on state level to cope with waste management or to take actions against those who contribute to land pollution - industries and factories.

### 5: Growing population:

The growing population needs greater resources and would cause greater consumption rate. As a result, land pollution becomes uncontrolled.



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→ Part B:

What were the main goals of Cop-27:

Cop-27 was the annual session of World Leaders under UNFCCC to bring about possible solution for climate change. It was held in Glasgow in the month of November

Main goals:

1: Prepare targets for individual states: All the members had to draw potential targets for achieving the goal of reducing global temperature to 1.5°C.

2: Damage funds for vulnerable countries:

Pakistan took the leading step in formulating and passing damage funds to vulnerable countries that are hit hard by recent catastrophes.

3: Setting new goals for industrial countries:

mod. of industrial countries



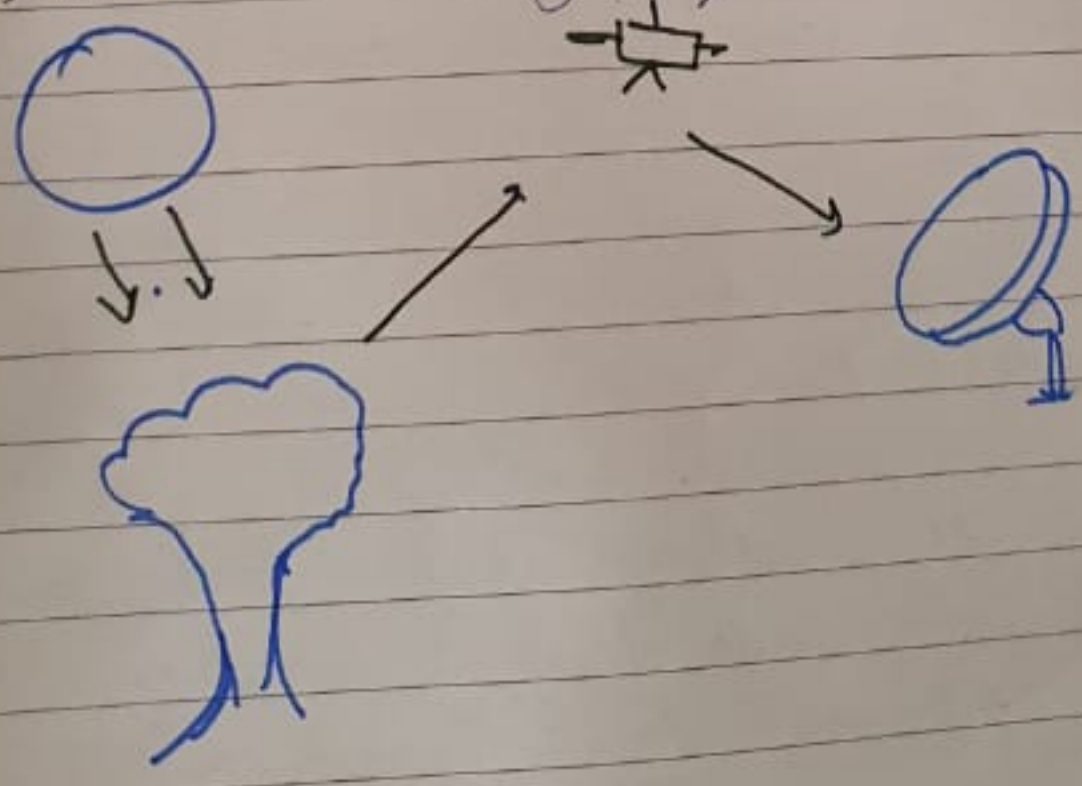
pledged to go for electric cars and renewable energy generation by 2030:

4: Progress assessment: The conference was to look into the progress of previous set goals. However, no encouraging progress was observed.

→ Part C:

What is the role of GIS in environmental science?

GIS: known as geographic information system. Through remote sensing, GIS is capable of analyzing the condition of land and geography





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The information system is used to weather analysis. It can also be used to predict weather systems.

With the growing temperature, GIS has become a reliable tool to collect information through satellites without even being present at the area.

It can collect images, graphs and other geographic data.

→ Part D:

What are the fundamentals of Artificial Intelligence?

Artificial intelligence is the branch of computer science that performs functions which are deemed to be intelligent. Example reasoning, problem solving and learning.

Fundamentals of AI:

Following are the primary fundamentals of Artificial Intelligence.



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- Self learning through available information
- Process input data and give output with have instructions
- Is machine independent
- Utilized for different purpose
- Speeds up problem solving
- Can make decisions
- Language learning through language module
- Generates AI capable of text, video and content production



Question number 6

→ Part A:

Identify the series

① 10, 100, 200, 310, 430

$10 + 90 = 100$  ,  $100 + 100 = 200$

$200 + 110 = 310$  ,  $310 + 120 = 430$

② 3, 7, 23, 95, 479

$3 \times 2 + 1 = 7$

$7 \times 3 + 2 = 23$

$23 \times 4 + 3 = 95$

$95 \times 5 + 4 = 479$

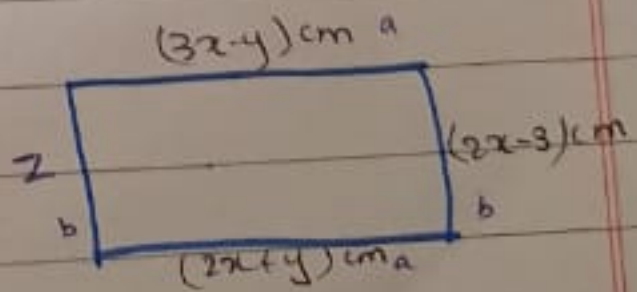
→ Part B

Find the area of rectangle

Perimeter = 144

$P = 2b + 2a$

$144 = 2(2x-3)cm + 2((3x-4)cm(2x+y)cm)$



$144 = 4x - 6 + (6x^2 + 3xy - 2xy - y^2)$

$144 = 4x - 6 + 12x^2 + 6xy - 4xy - 2y^2$



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$$\frac{144}{2} = 2(2x - 3 + 6x^2 + 3xy - 2xy - y^2)$$

$$72 = 2x - 3 + 6x^2 + 3xy - 2xy - y^2$$

$$72 - 3 = 2x + 6x^2 + 3xy - 2xy - y^2$$

$$69 = 2x(1 + 3x) + xy - y^2$$

$$69 = 2x(1 + 3x) + y(x - y)$$

$$69 = (2x + y)(1 + 3x)(x - y)$$

→ Part C:

Nisha is 15y older to Romi. If 5y ago Nisha was 3 as old as Romi then find Nisha's present age.

$$\text{Romi age} = x$$

$$\text{Nisha Age} = x + 15$$

Five years ago

Nisha

$$x + 15 - 5 = 3(x) \quad \text{--- (1)}$$

$$x + 10 = 3x \quad \text{--- (2)}$$

$$3x - x = 10 \quad \text{--- (3)}$$

$$2x = 10$$

$$x = 5$$



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Present age of Nisha

$$= 15 + x$$

$$= 15 + 5$$

$$= 20$$

Answer

→ Part D:

The biggest number of carton needed for following fruits:

$$\text{Oranges} = 210$$

$$\text{Apples} = 252$$

$$\text{Pears} = 294$$

Taking HCF

$$210 = 5 \times 6 \times 7$$

$$252 = 1 \times 6^2 \times 7$$

$$294 = 1 \times 6 \times 7^2$$

$$\text{HCF} = 42$$

Biggest possible number carton  
required is 42  
Answer



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## Question number 7

→ Part A:

Original price of shirt = ?

percentage increase = 20%

New price = 80 + x

Solution  $x + 20\%$  =  $x + 80$

$$\frac{x + 20x}{100} = x + 80$$

$$\frac{100x + 20x}{100} = x + 80$$

$$120x = (x + 80) 100$$

$$120x = 100x + 8000$$

$$120x - 100x = 8000$$

$$20x = 8000$$

$$x = \frac{8000}{20}$$

$$x = 400$$

The original price of shirt before raising 20% was 400

$$x = 400 - 80$$

$$x = 320 \quad \text{Answer.}$$



→ Part B

The code for SISTER is  
BROTHER is ODDNSNOA

Decoding BROTHER

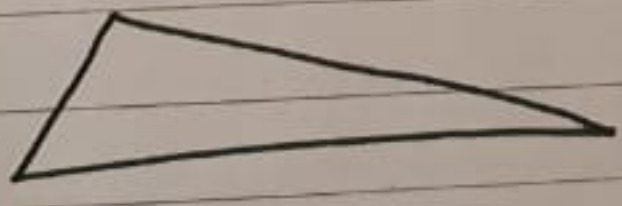
- B = O
  - R = D
  - O = G
  - T = S
  - H = N
  - E = O
  - R = A
- S = H
  - I = U
  - S = K
  - T = S
  - E = K
  - R = A

→ Part C

Define and draw the following

1: Scalene triangle

When all sides of the triangle are different measures it is called Scalene triangle

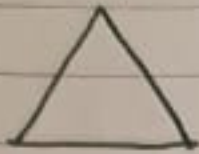


Scalene triangle



## Equilateral Triangle

Triangle having equal sides is called equilateral triangle



Isosceles triangle with right angle



Part D:

Find probability

Solution:

Total slices of pizza = 8

Raisin slice = 3

Probability of picking  
raisin slice by shiza

$$\text{probability} = \frac{\text{favourable outcome}}{\text{total outcome}}$$

$$P = \frac{3}{8}$$

$$\text{probability is } \frac{3}{8} \text{ or } 0.375$$