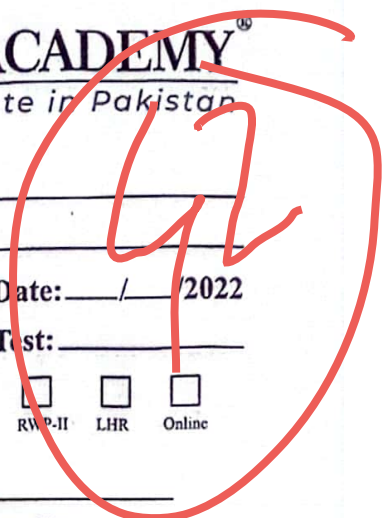


General Instructions

Name: _____
 Father Name: _____
 LMS ID: _____ Date: ___/___/2022
 Subject: _____ Paper: _____
 Batch No. _____ Campuses Main Campus ISB-2 RWP-I RWP-II LHR Online



1. Give numbering to headings
2. Do not write lengthy paragraphs. Write medium sized paragraphs with headings.
3. Do not use table for comparison and contrast questions.
4. Draw figures/diagram/flowchart where needed.

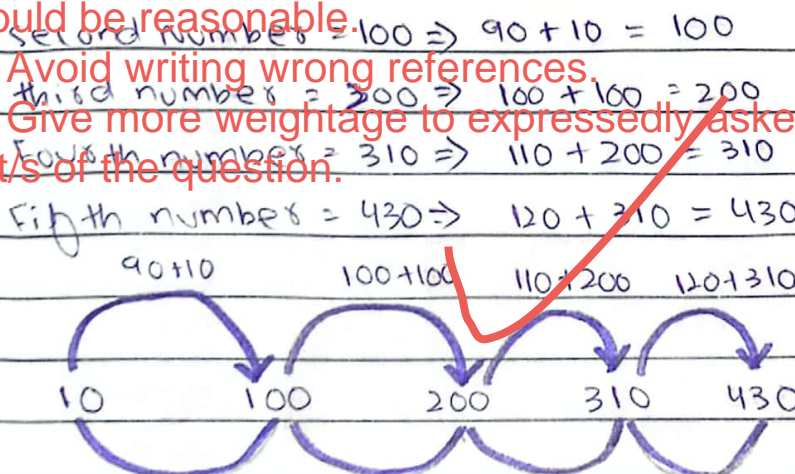
5. Start new question from fresh page.
6. Write unit of the answer in ability section.
7. Explain mathematical steps and the reasoning for better score.
8. Change colour scheme for references to give them more visibility.

Section 2
Question no #06
Part (a)

9. Manage time well.
10. Wide page borders are discouraged. Should be reasonable.
11. Avoid writing wrong references.
12. Give more weightage to expressedly asked part/s of the question.

i) 10, 100, 200, 310

Solution:



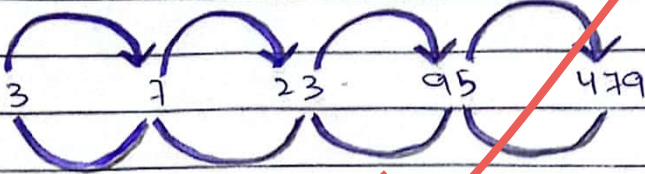
The series follow addition of previous number with 90 and then add 10 with in every step.

ii) 3, 7, 23, 95

Solution:

First number = 3 \Rightarrow ~~3~~
 Second number = 7 $\Rightarrow 3 \times 2 + 1 \Rightarrow 7$
 Third number = 23 $\Rightarrow 7 \times 3 + 2 \Rightarrow 23$
 Fourth number = 95 $\Rightarrow 23 \times 4 + 3 \Rightarrow 95$
 Fifth number = 95 $\times 5 + 4 = 479$

$$3 \times 2 + 1 \quad 7 \times 3 + 2 \quad 23 \times 4 + 3 \quad 95 \times 5 + 4$$



So, the series follow the multiplication of previous number with 2, 3, 4 and addition of 1, 2, 3.

Part (b)

Solution:

Equating parallel sides.

$$3x - y = 2x + y \quad \because \text{As we know in rectangles opposite sides are equal.}$$

$$3x - 2x = y + y$$

$$x = 2y - 1$$

Now, According to the formula.

Perimeter = sum of all sides.

$$114 = (3x - y) + (2x + y) + (2x - 3) + (2x - 3)$$

$$114 = 9x - 6$$

Now, putting the value of x from eq (i)

$$114 = 9(2y) - 6$$

$$114 = 18y - 6$$

$$114 + 6 = 18y$$

$$\frac{120}{18} = y \Rightarrow y = 6.667$$

$$18$$

Now, putting y value in eq (i)

$$x = 2(6.667)$$

$$x = 13.334 \text{ cm.}$$

Now, Put the value of x and y in perimeter equations which is given in the figure.

Putting in 1 ($3x - y$)

$$3(13.334) - (6.667) \\ = 33.332 \text{ cm}$$

Putting in 2

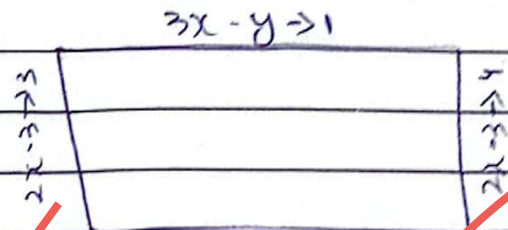
$$2(13.334) + (6.667) \\ = 33.332 \text{ cm}$$

Putting in 3

$$2(13.334) - 3 = 23.668 \text{ cm}$$

Putting in 4

$$2(13.334) - 3 = 23.668 \text{ cm}$$



Now, calculating area of the rectangle

A By applying formula

$$A = L \times W$$

$$A = 23.668 \times 33.332$$

$$A = 788.90 \text{ cm}^2$$

Ans

Part (c)

Solution:

Let the present age of Romi be x
Nisha is 15 years elder than Romi

So, the present age of Nisha = $x + 15$

So, Nisha's age five years ago = $x + 15 - 5 = x + 10$

Romi's age five years ago = $x - 5$

And five years ago Nisha's age is three times of Romi's age

$$(x + 10) = 3(x - 5)$$

$$x + 10 = 3x - 5$$

$$10 + 5 = 3x - x$$

$$2x = 25$$

$$x = 12.5$$

$$\text{Romi's age} = 12.5$$

$$\text{Nisha's age} = x + 15$$

$$= 12.5 + 15 \text{ Years}$$

$$= \boxed{27.5} \text{ Ans.}$$

Question No. 18

Part (d)

Solution.

According to the statement

$$\text{Property left by Zahid} = 17,50,000$$

$$\text{Debt that his family has to pay} = 15,00,000$$

So,

$$\begin{aligned} \text{Remaining property} &= 17,50,000 - 15,00,000 \\ &= 16,00,000 \end{aligned}$$

So, the remaining property is to be distributed between his children i.e., a son and a daughter

According to the given condition

the share of son is double

So, let consider daughter share x

$$\text{son share} = 2x$$

Now, we know that, share of son + share of daughter = remaining property.

$$2x + x = 16,00,000$$

$$3x = 16,00,000$$

$$x = 16,00,000 / 3$$

$$x = 5,33,333.33$$

$$\text{share of daughter} = \text{Rs } 5,33,333.33$$

So, the share of 100 = $2x$
 $= 2(533,333.33)$ Rs
 $= 1066,666.667$ Ans.

Part (b)

Solution:-

First prime numbers = 1, 3, 5, 7, 11

cube root of first prime numbers = 1, 27, 125, 343, 1331

So, the Arithmetic formula = $\frac{\text{sum of all numbers}}{\text{Total number}}$

$$A.M = \frac{1 + 27 + 125 + 343 + 1331}{5}$$

$$= \frac{1827}{5} \Rightarrow 365.4$$

$$A.M = 365.4$$

Part (c)

Solution

According to the given conditions.

Man	Km	Days
50 ↓	20 ↓	40 ↑
70 ↓	20 ↓	x ↑

By applying indirect method, because if the number of man increase then number of days decrease.

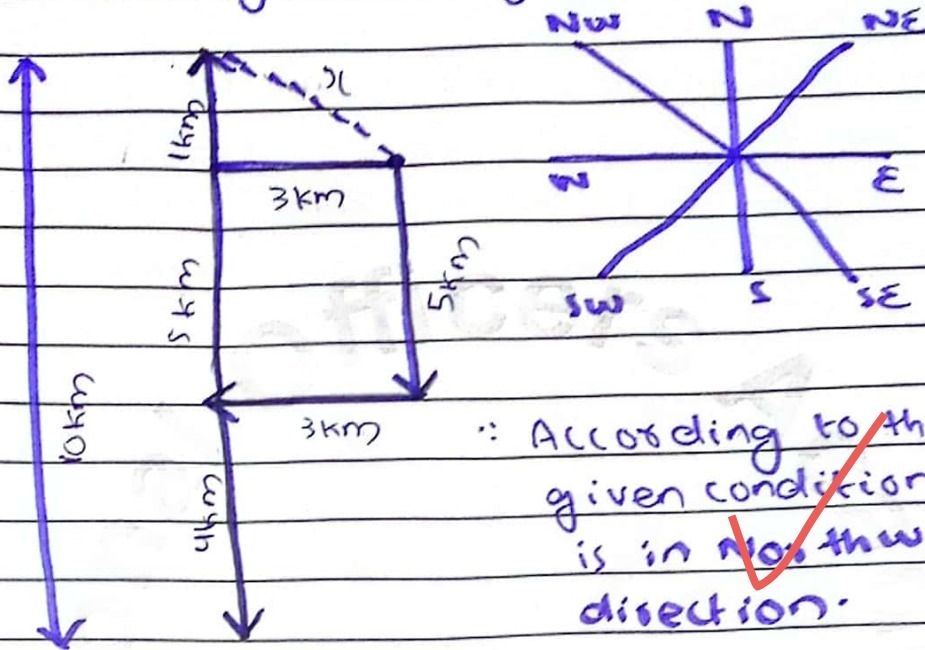
$$\frac{x}{40} = \frac{50 \times 28}{70 \times 20}$$

$$x = \frac{5 \times 40}{7} \Rightarrow 28.571 \rightarrow \text{no of days}$$

Part(a)

Solutions

According to the given condition



To find distance, we have to apply Pythagoras theorem which states that

$$\text{Hyp}^2 = \text{Base}^2 + \text{Perp}^2$$

$$\text{Hyp}^2 = (3)^2 + (1)^2$$

$$\text{Hyp}^2 = 9 + 1$$

$$\text{Hyp}^2 = 10$$

Taking square root on both side we get

$$\text{Hyp} = \sqrt{10}$$

$$\boxed{\text{Hyp} = \sqrt{10}} \text{ km}$$

Question no # 03

Part (a)

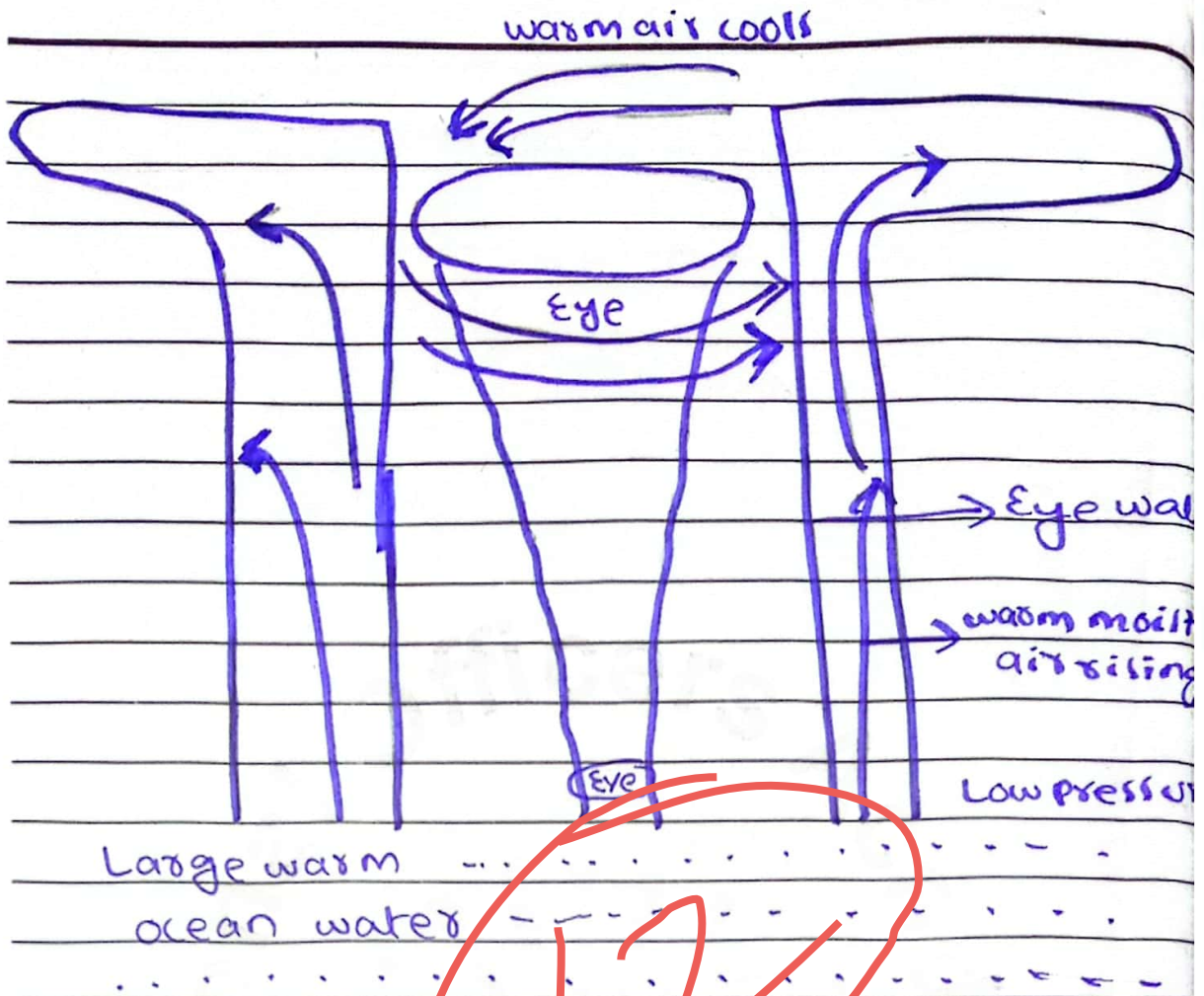
what is cyclone

A cyclone is a system of rotating winds inwards an area of low pressure. The direction of winds depends upon the location. For instance, in Northern hemisphere the direction of winds ~~is~~ is anti-clockwise, in Southern hemisphere, the direction of wind is clockwise direction.

How cyclone is formed

Cyclone is formed when a hot air from the equator and cold air from the polar sides diverge. When these both air collides the warm air, which is less dense as compared to cold air, starts ~~subsidising~~ ^{subsidising}. On the other hand, cold air, which is denser as compared to hot air, starts descending. As a result, an updraft is created.

This updraft and whole process gets bigger and bigger due to moisture supply from the oceans. Therefore, cyclone has the deadliest winds and it travels faster in the oceans. Moreover, Coriolis effect formed the spin motion in the cyclone.



The cyclone dissipates when it strikes with the land because the moisture, which it takes from the warm ocean, cuts off.

The Eye: House of the strongest and destructive winds.

Eyewall

The Eye of the cyclone is the deadliest part where strongest and destructive winds are formed. It is because of Coriolis effect, which creates the spin motion in cyclone, ~~the~~ is responsible for the eye formation.

Name: _____

Father Name: _____

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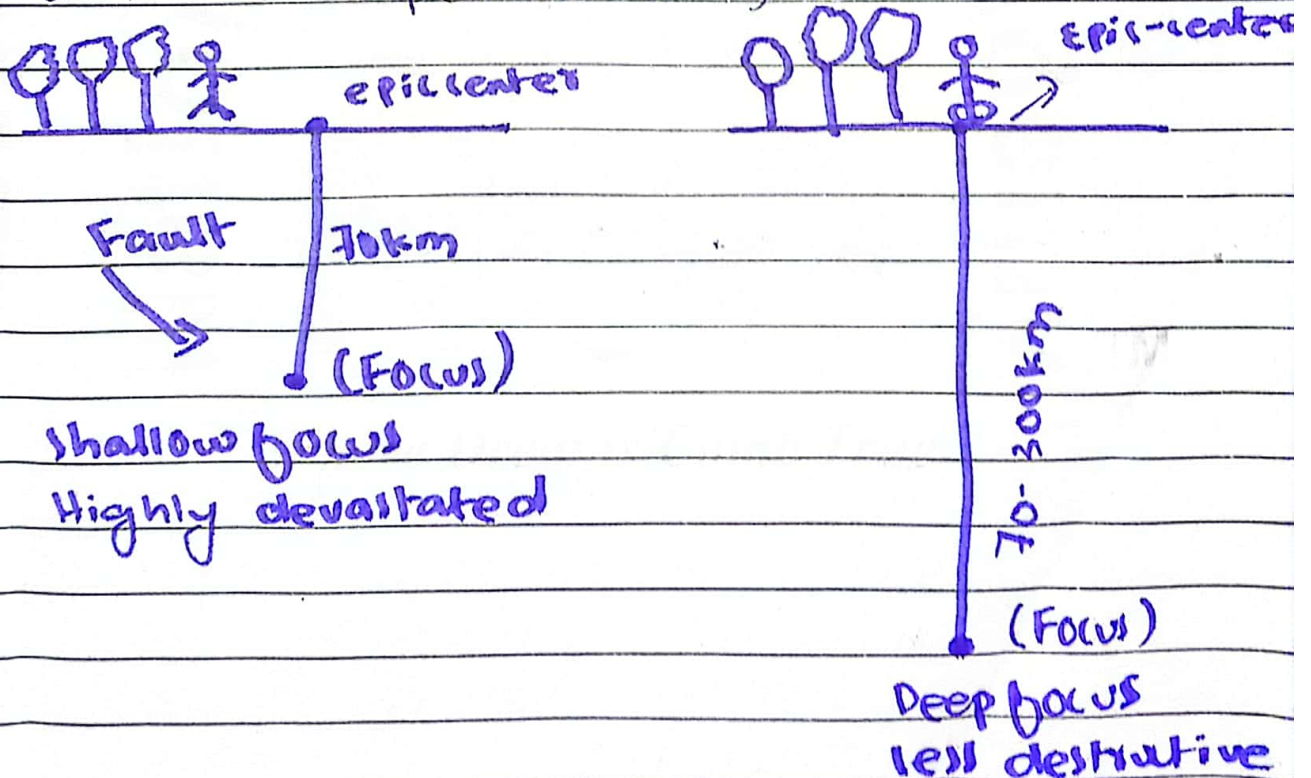
 Candidate Sign

 Invigilator Sign

Part (b)

1) What are shallow and deep focus

The shallow and deep focus are the two type of Earth quake. Former is found within the earth's outer crust layer, while latter refers is found within the deeper subduction zone.



What causes Earthquake

1) Natural causes

1.1) Shifting of tectonic plates

The most frequent cause of Earthquake is shifting of tectonic plates. When two plates collide with each other it creates a pressure on the plates. As a result, Earthquake occurs.

1.2) Volcanic eruption

The other major cause of Earthquake is volcanic eruption. The eruption of volcanoes also caused Earthquake and it is common in the Ring of Pacific.

1.3) Strike of Asteroid

When an asteroid strike, it also lead to Earthquake. It is because an asteroid strike will shake the earth. Consequently, an Earthquake will occur. However, asteroid should be big enough otherwise its impact is not felt.

3) Anthropogenic causes

- 1) Nuclear explosion
- 2) Dam-building
- 3) Mineral projects

4) Morocco Earthquake intensity

The recent earthquake in Morocco have the intensity of 6.8 magnitude.

Part (c)

1) Dengue fever

Dengue fever is a viral infection that spreads from mosquitoes to people. It is common in sub-tropical climates. Dengue is a mosquito when it bites human beings, ~~then~~ it creates a viral infection in the human body. It causes high fever and flu.

Which mosquito?

2) Primary causes of dengue fever

2.1) The primary cause of dengue fever is mosquitoes which ~~but~~ transfers viral infection into human body. After that, this viral infection can be transferred from human to human.

3) Preventive measures

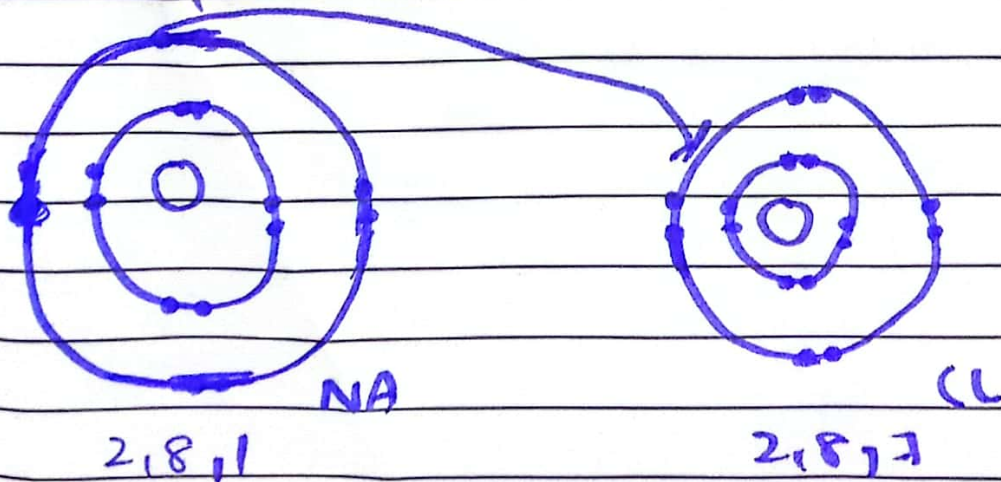
- 3.1) Use ~~insect~~ insect repellent
- 3.2) wear long-sleeved shirts and long pants
- 3.3) control mosquito inside and outside home.
- 3.4) ^{Apply} ~~spray~~ mosquito killer spray.
- 3.5) Ensure cleanliness.
- 3.6) Stay in well-screened houses.

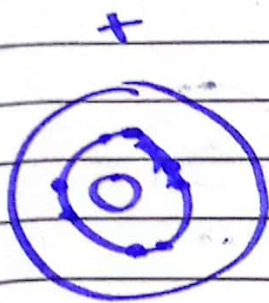
Part (d)

1) Ionic bond:-

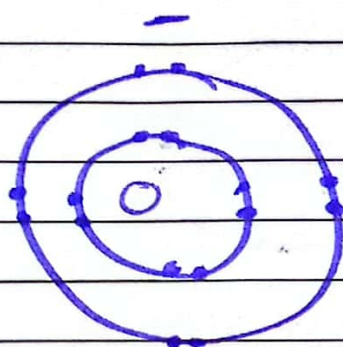
An ionic bond is a type of chemical bond that occurs between two atoms with significantly different electronegativities. In an ionic bond, one atom donates one or more electrons to another atom. This transfer of ~~atoms~~ electron results in the formation of two ions: positive charge ion and a negative charge ion. The electro-static attraction between these oppositely charged ions holds them together in a stable compound.

Example:





NA



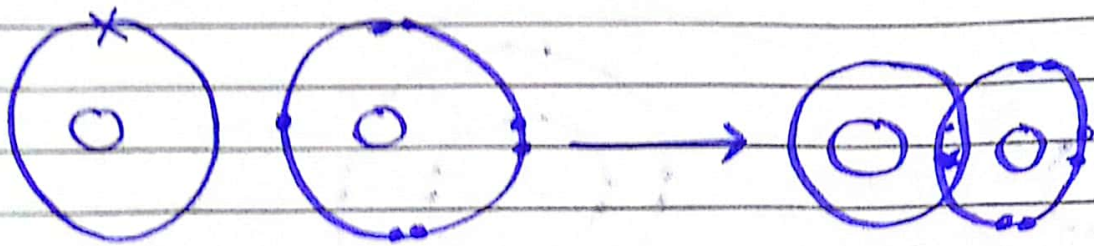
CL

Explanation.

Sodium chloride has an unstable configuration; therefore, he give its an electron chloride to form the stable position. After that, sodium ~~of~~ lose one electron which makes it positive charge and chlorine gain one electron therefore it become negative charge. After that, they become formed ionic bond due to Electro-static force.

2) Covalent bond

A covalent bond is a type of chemical bond that forms when two atoms share electrons to achieve a stable electron configuration. In covalent bond, electrons are shared between atoms. This sharing of electrons allows both atoms to fill their outmost layer electron shells.



hydrogen chlorine

hydrogen chloride

Explanation.

Hydrogen has an unstable configuration, therefore it shared with an electron with a chlorine and hydrogen chloride is formed. Now, both atoms become stable. So, in covalent bond, the atoms share their electron to achieve stable condition.

Question No # 04

1) Causes of land pollution.

1.1) Litter

The main cause of land pollution is the litter which is the product of waste material.

1.2) waste disposals

waste disposals is another point of land pollution. The waste disposals include e-waste, hospital waste, and industrial waste.

13) Agricultural (Pesticides) Fertilizers.

Agricultural fertilizers are responsible for more than 50 percent of land pollution. Excessive use of fertilizers affects the productivity of a soil.

14) Rapid Urbanization

Rapid urbanization has escalated deforestation across the world. Therefore, the productivity of soil is affected. Moreover, rapid urbanization has also increased solid waste which affects land.

15) Mining

Mining is another reason of land pollution. Owing to mining, toxic materials are taken out from the earth crust which affects land.

16) unchecked construction.

Rapid growth in construction has also increased land pollution. It is the usage of concrete not only affects environment, but also has affected land.

Part (b)

what are the main goals of the COP-27

1.1) Achieving 1.5C target

The main target of the COP meetings is to achieve 1.5C target. Therefore, COP-27 also set to prioritize 1.5C target. It ensures to achieve 1.5 target.

1.2) Transformation of Energy sector from non-renewable to renewable sources

COP-27 another target is transformation of energy sector from non-renewable to renewable sources. It commits transformation in energy sector. Besides, it has increased investment in renewable sources.

1.3) climate financing

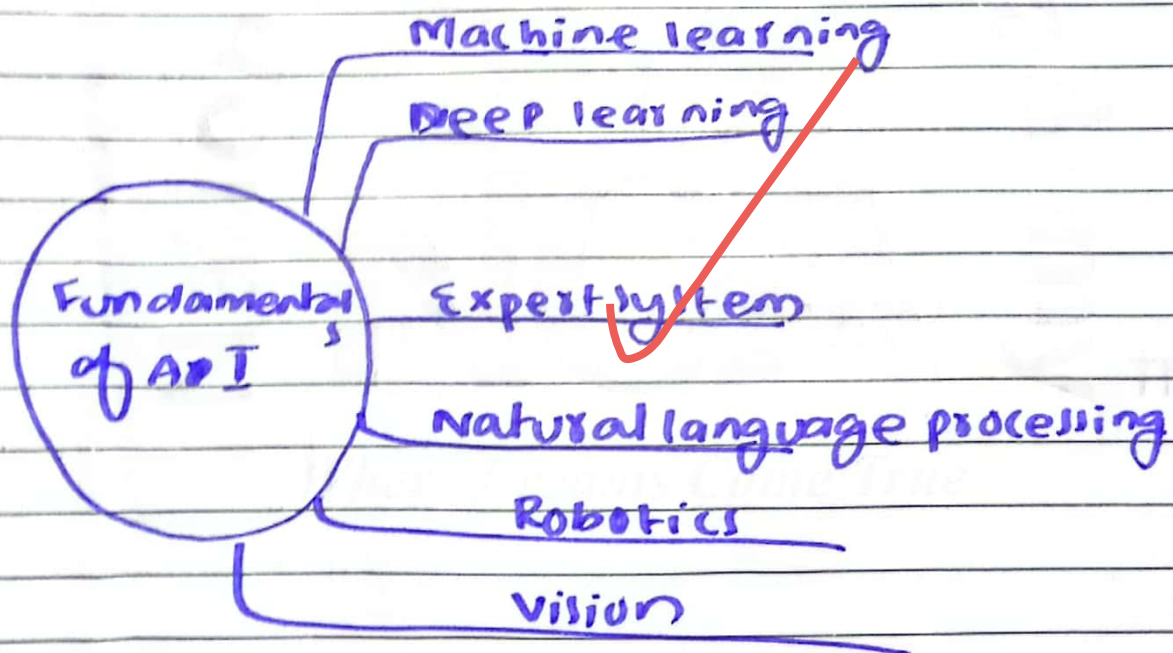
Pakistan faced havoc flood which inundated half of the country. So, Pakistan raised the issue of climate financing in Egypt. Therefore, COP-27 remainder western countries' promises and obligations towards southern countries.

1.4) Increase investment in green economy

COP-27 also ensures that future world belongs to the green economy. It is because non-renewable energy has affected the climate change. So, it has increased investment in green economy.

Part d

1) Fundamentals of Artificial Intelligence.



1) Machine learning

Machine learning is the fundamental of Artificial Intelligence. It plays an important role to guide machine to perform task intelligently.

1.2) Deep learning

Deep learning is another concept or fundamental of Artificial intelligence that ~~deep~~ plays an important role in machine cognitive abilities.

1.3) Expert system

Expert system is the fundamental of Artificial intelligence which helps in performing tasks independently. There are super systems which perform tasks efficiently and independently.

1.4) Natural language processing

Natural language processing is another fundamental of artificial intelligence in which speech recognition projects are developed.

1.5) Robotics

Robotics is the fundamental of Artificial intelligence which deals with the formation of robots and their cognitive abilities.