

Part - II

Section - I

Q no 2

a)

Climate:

Climate is any systematic change in a long term statistics of climate variables, such as global temperature, oceanic currents, winds, precipitation, or atmospheric pressure.

Environment:

Environment can be defined as the total sum of all living and non-living elements and their effects on human life.

Difference between Environment and Climate:

Climate	Environment
1) Climate can change slowly over time, it may takes decades or centuries	Environment can change rapidly by natural events or humans activities
2) Affected by pollution, deforestation and urbanization, green house gases	Affected by deforestation, green house gases and natural activities but for a long period

3) Climate varies In a long period of time	Environment varies constantly
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4) El-Nino, El La - Nino are the climate patterns	Environment can be described by climate weather pattern
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Causes of Air Pollution in Pakistan:

Air Pollution:

When air contains gases, dust, or odor in harmful amount then it is called air pollution. It is because of harmful gases like Carbon monoxide, Nitrogen Oxide (NO , NO_2), etc.

Causes of Air Pollution in Pakistan:

Causes	Impacts on Air
1) Non-renewable energy	Release harmful gases into atmosphere
2) Vehicle Exhaust	Carbon monoxide and Carbon dioxide release in the air
3) Over Population	more deforestation, loss of biodiversity

Cause air quality degradation

4) Brick kilns .

These traditional processes affect air by releasing SO_2 & NO_x into the air.

Q2)

b)

Vitamins:

Vitamins are organic compounds which are essential for the growth of the body.

Types of Vitamins:

There are two types of vitamins.

1) Fat Soluble Vitamins

Vitamins (A, E, D and K) are fat soluble vitamins.

2) Water Soluble Vitamins

Vitamins (B and C) are water soluble vitamins.

Role of Vitamins In Human Body:

The brief overview of vitamins and their role is described in given table

Vitamin	Role
A	Vision, immune function, growth
B Complex	Energy metabolism, DNA synthesis
C	Antioxidant
D	Bone health
E	Skin and heart health
K	Helps in blood clotting
F	Brain function, maintain healthy cell membrane

Q2) c

COP-27 and its Goal:

The COP-27 was held in Egypt. This conference goal was to provide loss and Damage Fund to vulnerable countries that are hit by floods, droughts and other climate change problems. However, it was just an agreement.

COP-28 and its Goal:

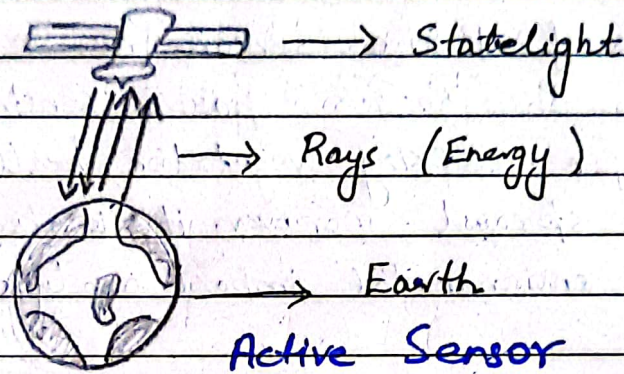
The COP-28 was held in Dubai, United Arab Emirates. The goal of this conference was to deliver old promise funding of loss and Damage Fund. Furthermore, the biggest goal was to phase out fossil fuels.

Q2) d)

Active Sensors:

Active sensing system emit their own energy, like radar or LiDAR and measure the reflected or emitted energy.

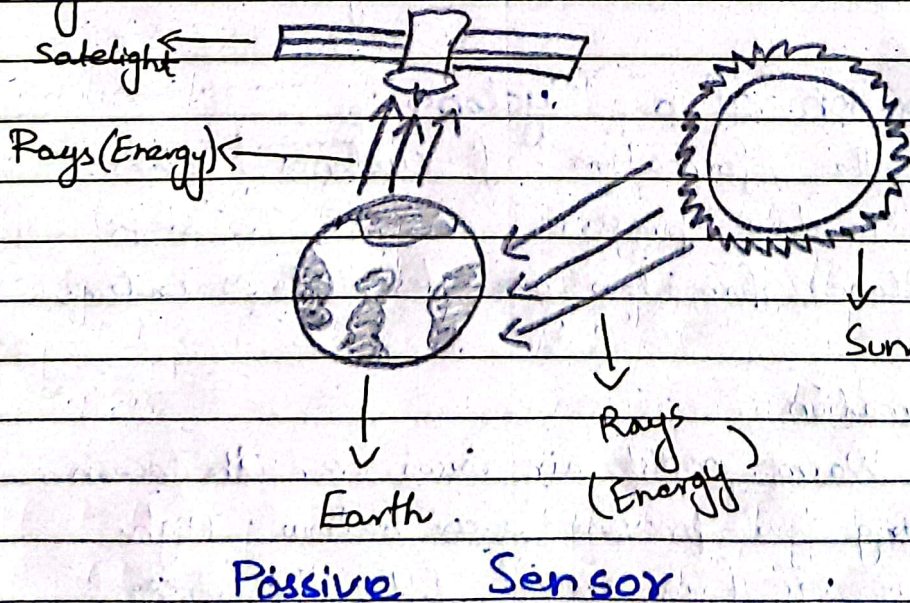
Diagram:



Passive Sensors:

Passive sensing systems relies on passive source of energy, such as sunlight, etc

Diagram:



Uses in G.I.S

a) Use of Active Sensors in G.I.S:

In G.I.S active sensing are employed for applications such as terrain mapping, monitoring of land.

b) Use of Passive Sensors in G.I.S:

In G.I.S passive sensing are used for assessing vegetation health, and urban sprawl. Moreover, it is also used to monitor environmental impact analysis.

Q5)

a)

Cyclones:

Cyclones are originate over oceans in tropical areas and coastal regions.

Formation of a Cyclone:

The formation of cyclones takes place in low pressure areas. The steps of cyclone formation are described as under:

1) Formation:

Warm, moist air raises over the ocean, creating low-pressure area below. High pressure air form around fill this area, continuing the cycle.

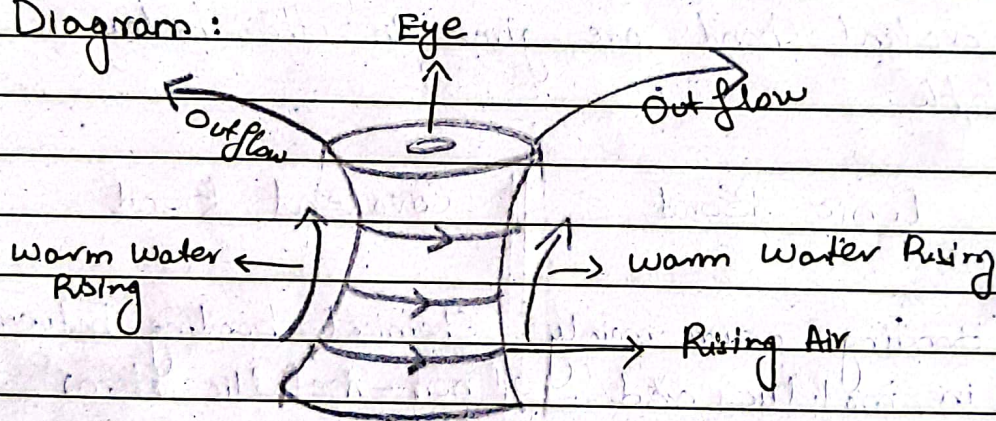
2) Cloud Formation:

The rising air forms a cloud as water evaporates from the ocean, leading to the formation of storm.

3) Eye Formation:

As the storm system rotates faster, an eye forms in the center, which is clear with low pressure air.

Diagram:



Formation of Cyclone

Q5)

b) ...

Ionic Bond:

The complete transfer of an electron from one atom to another is called Ionic bond.

Examples:

Sodium Chloride (NaCl), Sodium Fluoride (NaF)

Covalent Bond:

The sharing of electrons between atoms is called covalent bond.

Examples: Water (H_2O), NH_3

Difference between Ionic and Covalent Bond:

The difference between ionic and covalent bond are given in the below table:

Ionic Bond	Covalent Bond
Bonding occurs mainly in metallic and non-metallic atoms	Chemical bonding between non-metallic atoms
Charges are opposite in ionic bonding i.e non-metals have negative charge and metals having positive	Bonding occurs between atom which having similar electronegativities
Electron transferred	Electron shared
High melting point and a definite shape	Low melting point and irregular in shape

Examples :

NaCl, H₂SO₄

Example :

CH₄, HCl

Q5

c)

a) Gamma Rays:

Gamma rays is a stream of high-energy electromagnetic radiations given off by an atomic nucleus undergoing radioactive decay

Uses of Gamma Rays:

- 1) Sterilize medical equipment
- 2) Radio therapy to kill cancerous cells
- 3) Nuclear industries

b) X-rays:

X-rays ^{is} a form of electromagnetic radiation which having a wavelength ranging from 0.01 to 10 nanometers.

Uses of X-Rays:

- 1) It can detect the breakage of human bones
- 2) It can be used as a scanner to scan the luggage
- 3) It can detect the defects of welds in industries
- 4) Can be used in restoring old printing

Radio Waves:

Radio waves is a form of electromagnetic radiation. It can travel for a long distance and penetrate through material.

Uses of Radio Waves:

- 1) Wireless communication and transfer information
- 2) Broadcast of Radio and television
- 3) Air traffic control
- 4) Navigation system
- 5) Communication for submarines, deepsea and caves

Q5)

d)

a) Tides:

The gravitational pull of the celestial body on the Earth and the ocean leads to the formation of tides. It can be defined as alternate rise and fall of the ocean water.

Causes of formation of Tides:

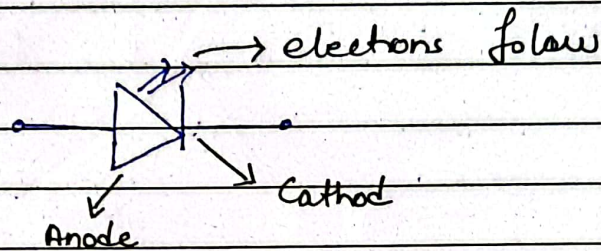
This is caused by the gravitational pull and the rotation of earth.

1. The gravitational force exerted on Earth by the Sun
2. The gravitational force exerted on Earth by the moon
3. Rotation of the Earth

b) Light Emitting Diode (LED):

Light emitting diode is a semiconductor device that emits lights when an electric current pass through it.

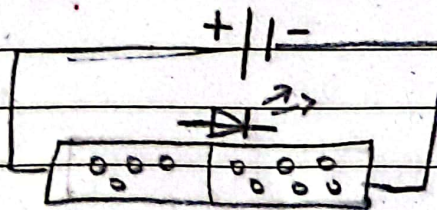
Diagram:



L.E.D Symbol

Working Principal of LED.

When the diode is forward biased, the minority electrons moves towards cathode side and minority holes are sent from anode to cathode.



Uses of LED:

- 1) Uses of TV back lighting
- 2) Uses in mobile phone display
- 3) Dimming of lights

~~Section - I~~
Section - II

Q 6)

a)

Data:

$$\text{Radius} = r = 8 \text{ cm}$$

$$\text{Height} = h = 15 \text{ cm}$$

$$\text{Volume} = ?$$

Formula:

$$V = \pi r^2 h$$

Solution

$$V = \pi \times (8)^2 \times 15 \quad \therefore \pi = 3.142$$

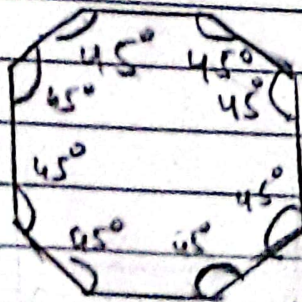
$$= 3.142 \times 64 \times 15$$

$$V = 3014.4 \text{ cm}^3 \quad \text{Ans}$$

Q 6)

b)

Regular Octagonal shape will be 45° because all side each angle of octagonal shape is 45°



Octagonal Shape

Q6)

c)

Data:

$$\text{length} = 4.6 \text{ mile}$$

$$\text{depth} = 4.6 \text{ mile}$$

$$\text{width} = 2.2 \text{ mile}$$

Formula:

$$\text{Area} = A = L \times W$$

Solution:

$$A = 4.6 \times 2.2$$

$$A = 10.12 \text{ miles}^2 \quad \text{Ans}$$

Q6)

d)

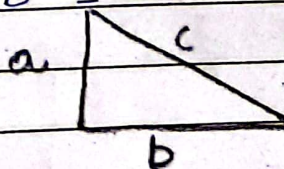
Data:

$$\text{Height of house} = 10 \text{ m}$$

$$\text{base of the ladder} = 3 \text{ cm away}$$

Formula

$$a^2 + b^2 = c^2$$



Solution

Taking height as a , base as b and find c which will be height of the ladder.

$$a^2 + b^2 = c^2$$

$$10^2 + 3^2 = c^2$$

$$100 + 9 = c^2$$

$$109 = c^2$$

∴ Square root both sides

$$\sqrt{109} = \sqrt{c^2}$$

$$\sqrt{109} = c$$

$$c \approx 10.440 \text{ m}$$

So, the height will 10.4 m of the ladder

Q8

a) IQ

IQ is the measure of cognitive abilities such as problem solving, reasoning, and abstract thinking

Formula of IQ

$$\text{IQ} = \frac{\text{Mental Age} \times 100}{\text{Physical Age}}$$

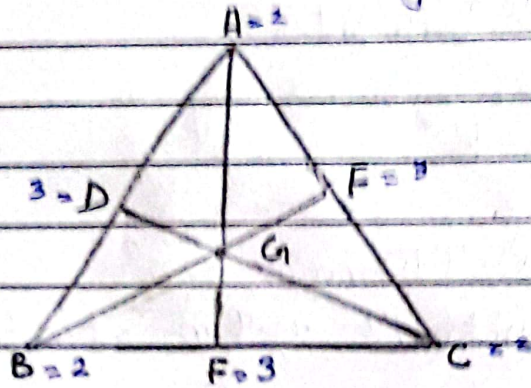
Factors that affects IQ :

The factors that affects IQ are

- 1) Verbal comprehension
- 2) Spatial ability
- 3) Perceptual speed
- 4) Numerical ability
- 5) Reasoning

Q8)
b)

Number of Triangle = ?



$$15 + 1 = 16$$

Total number of triangle are 16

Q8 c)

word: Superintendent

Total number of words: 13

Total number of Vowels: 5

Probability of choosing a vowel:

$$= \frac{5}{13} \text{ Ans}$$

Q8 d)

Solution

$$\text{Zain part} = 2x$$

$$\text{Aslam part} = 3x$$

$$\text{Ashraf part} = 7x$$

$$\text{Total parts} = 2x + 3x + 7x = 12$$

$$\rightarrow \text{Zain's share} = \frac{2}{12} \times \frac{720}{4320}$$

$$= \text{Rs. } 720$$

$$\rightarrow \text{Aslam's share} = \frac{3}{12} \times 4320$$

$$= \text{Rs. } 1080$$

$$\rightarrow \text{Ashraf's share} = \frac{7}{12} \times 4320$$

$$= \text{Rs. } 2520$$

$$\text{Total} = 720 + 1080 + 2520 = 4320$$

MAZ

Proved