

a.

Climate vs Environment

Natural phenomena.	Man-Made phenomena.
Made up of temperature, rainfall and seasons.	Made up of factors such as air quality, water quality, no. of lakes, greenery etc.
Has a broader scope and impacts.	Has a limited scope and impact.
Cannot be controlled by humans.	Can be controlled by humans.

Explanation:

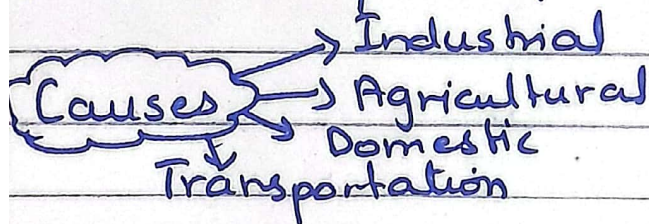
Climate ~~change~~ is a natural phenomenon whereas Environment is a man-made concept. This means that climate is beyond the control of humans since ^{they} ~~be~~ cannot alter the seasons.

and their timings. They cannot control how early or how late a season arrives or leaves whereas humans can shift from a cooler to a hotter ~~or~~ environment by ~~or~~ changing cities or places. They can ~~to~~ make their environment clean or unclean ~~as per~~ their will or actions.

Climate constitutes rainfall, global temperatures, seasons whereas Environment constitutes water quality, air quality, number of lakes, trees and type of lands such as fertile, dry ~~an~~, hilly or mountainous. Climatic factors such as global temperatures, rainfall and seasonal variation can directly influence the environment we live in by influencing water quality by flooding or air quality (dry, humid) by rainfall.

Lastly, climate has a broader scope and impact ~~or~~ since a slight increase in global temperature can have global impacts such as wildfires, floods, cyclones and much more. Environment has limited scope and impact. For example, Lahore's air quality and smog only impacts the residents of Lahore. ~~and~~

a) Causes of air pollution in Pak:



1. Industrial

Emission of dangerous gases such as SO_x , NO_x from textile, fertilizers industries pollutes the air. Apart from that Brick kiln industry is a major contributor of CO_2 to the atmosphere/air.

2. Agricultural:

Large and old tractors emit SO_2 , CO , CO_2 and NO_2 from their engines

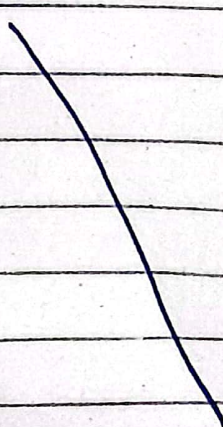
which pollutes the air. In addition to that, burning of crop residue adds Methane (CH_4) and CO_2 to the environment.

3. Domestic:

Household consumption of gas in cooking results in CH_4 , CO_2 emissions. Apart from that, household cleaners emit CFC's which contribute to the predicament of air pollution.

4. Transportation:-

Poor public transport and increased numbers of private ~~pub~~ possessions of cars, bikes and rickshaws emit CO_2 , CO and SO_2 .



2 b. Note on Vitamins.

Ans: Vitamins are an integral part of a balanced diet. There are total 6 vitamins which further fall into two categories. Fat Soluble and Water Soluble. 4 vitamins are fat soluble which include A, D, E and K. Water Soluble vitamins are essential B and C. All of them are needed for growth and optimum functioning of the body. Since a balanced diet constitutes adequate amounts of nutrients, hence excess and deficiency of vitamins is detrimental to human body.

Role in Human body.

- 1) Vitamin A: prevents night-blindness
- 2) Vitamin E: good for skin and hair.
- 3) Vitamin D: prevents rickets in children and osteoporosis in adults.
- 4) Vitamin K: Important for blood clotting otherwise excessive bleeding

from wounds occurs.

- 1) Vitamin C: prevents scurvy (bleeding gums).
- 2) Vitamin B complex: Necessary to prevent Beri Beri (B₁ deficiency), pellagra (B₃ deficiency), and ~~anemia~~ different types of anemias.

Q2: c)

COP 27

COP 28

- | COP 27 | COP 28 |
|---|--|
| 1) Reduce GHG emissions | 1) Reduce fossil fuel burning |
| 2) Establishment for green fund to compensate climate affected countries with lower emissions | 2) Shift to green energy alternatives such as solar.
3) The idea of Green fund should be practically implemented now. |

GIS: Geographical Information System is a system that uses geographical information to form image.

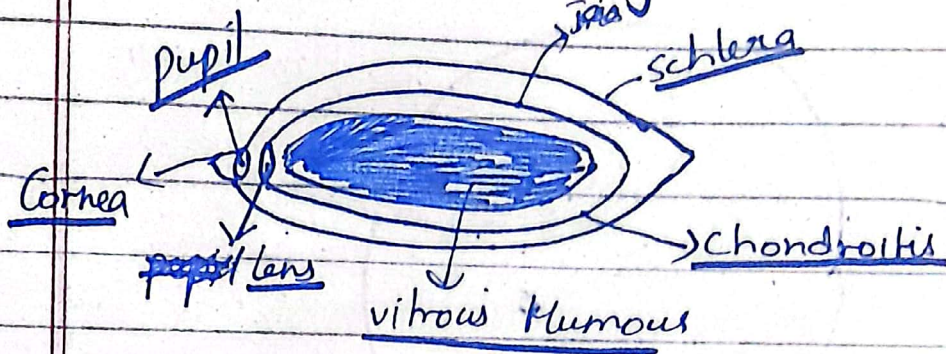
Active Sensor: Active sensors are used ~~where~~^{when} there is not adequate natural light (at the time of night). These sensors emit light and gather the scattered radiation to.

Passive Sensor: These sensors use re-radiated natural light from the target object to process information.

GIS: how are they use in GIS?
Software in GIS system combines spatial data with ~~external~~^{data} data of resources such as passive and active sensors. Tools in software for analyses then process this to information.

Q4. a)

Structure of Eye.



Myopia

① (Short-sightedness)

• Can be treated by glasses which have concave lens

Hyperopia

(far-sightedness)

• Can be treated by glasses which have convex lens.

• Other treatments are surgery and eye exercises.

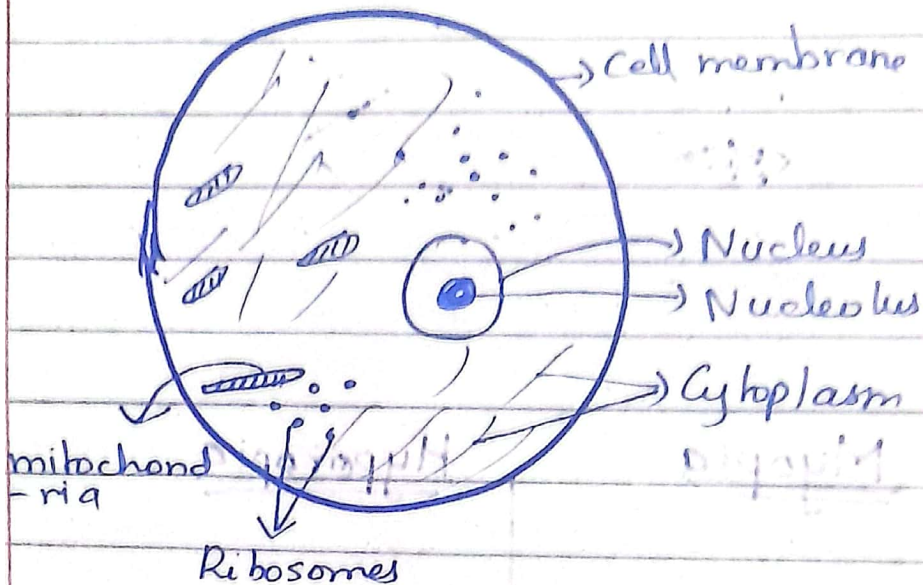
② Nutritional treatment:

Foods high in vitamin A such as carrots, bell-peppers, bananas etc.

③ Reduced Screen time.

Over-exposure of laptop, mobile screens should be reduced and screens should be kept at a distance from eyes while watching.

b) Different Units in Human Cell:



Smooth ER: Bundle/Stacks of cisternae with ^{out} Ribosomes attached. Fat synthesis is their role.

Rough ER: Ribosomes are attached.

Nucleus: Contains nucleus which has genetic information.

Mitochondria: Power-house of the cell. Generates ATP (Adenosphine triphosphate) for energy production.

Cell Membrane: Encloses the cell and controls permeability of nutrients etcetra. Maintains osmotic balance.

Cytoplasm: Holds cell organelles and contains nutrients and water for cell.

Q#4. C: Types of Galaxies

- Milky

Q#4. d.

Sun vs Earth

- | | |
|--|--------------------------------|
| → Made up of gases Hydrogen and Helium | → Made up of many gases |
| → Warmer | → Moderate |
| → Single core | → 3 cores |
| → No rivers, mountains or landscape | → Rivers, mountains, landscape |

Section II

Q#7: a) Suppose the number multiplied is x and $x \geq 1$.

Multiplying 1 with $\frac{3}{5}$:

$$\Rightarrow 1 \times \frac{3}{5} = \frac{3}{5} = 0.6$$

Multiplying 1 with $\frac{5}{3}$:

$$\Rightarrow 1 \times \frac{5}{3} = \frac{5}{3} = 1.6$$

Percentage error in calculation:

Since 0.6 is 37.5% of 1.6

$$\text{So } 100\% - 37.5\% \Rightarrow 62.5\%$$

Hence the percentage error is 62.5%.

Q#7 b) Total parts of ice creams cones + chocolates: $8 + 5 = 13$

Chocolates in box = 30

Let the total number of chocolates be x ,

Hence number of chocolates

$$\Rightarrow \frac{5}{13} \times x \Rightarrow 30$$

$$x = \frac{5 \times 30 \times 13}{5} = \frac{390}{5} = 78$$

$$\Rightarrow \boxed{x = 78}$$

Total no. of ice creams \longrightarrow

\Rightarrow ~~78~~ ~~x~~ = ice cream cones

Total no. of ice cream cones:

$$\Rightarrow x - 30$$

$$\Rightarrow x = 78$$

$$\Rightarrow x = 78 - 30 \Rightarrow \boxed{48}$$

Total ice cream cones: $\boxed{48}$

One Tablet has: 30mg of medication:

Let the no. of tablets having 240mg medication be: x

Applying "direct proportion"
Since the dose of medicine and the number of tablets are proportional:

No. of tablets	Dose (mg)
1	30
x	240

$$\Rightarrow 240 \Rightarrow 30x$$

$$\Rightarrow \frac{240}{30} \Rightarrow \frac{30x}{30} \Rightarrow \frac{240}{30} \Rightarrow \boxed{8}$$

Hence, total number of tablets containing 240 mg medicine is 8.

d. Equation 1:

→ Average no. of 50 numbers:
~~let the~~

Since 2 numbers are 37

$$\text{so } \frac{37+37+x}{50} = 20$$

x is the sum of the remaining 48 numbers

$$\Rightarrow x = (20 \times 50) - 74$$

$$x = 926$$

Equation 2:

→ Average of after 43 digits are discarded:

$$\Rightarrow \frac{37+37+x}{7} = y$$

x = sum of the remaining numbers while y = average

& 7 is the remaining no.s after 50-43

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Since x from Equation
1 = 926' so substituting
 x in equation 2 :

$$\frac{37 + 37 + 926}{7} = y$$

$$7y = 37 + 37 + 926$$

$$7y \Rightarrow 74 + 926 \Rightarrow 1000$$

$$\frac{7y}{7} \Rightarrow \frac{1000}{7} \Rightarrow 142.8$$

$$y = 142.8$$

$$y = 142.8 \Rightarrow y = 142.8$$

Q#8:

a)

IQ formula:

$$\frac{\text{Mental Age} \times 100}{\text{Chronological Age}}$$

Factors affecting IQ:

- 1) Nutrition: All vitamins such as Vitamin B₉ and B₁₂ affect cognition and brain development.
- 2) Genetics:
- 3) Maternal Health: This leads to proper fetal development.
- 4) Environment: A healthy and competitive environment induces learning skills.

Q#8 b.) No. of triangles: 12

Q#8 c. For Vowels: A, E, I, O, U

Vowels in Superintendent.

3 times E

1 time U

1-time I

- 1) Chances of vowels occurring: 5
 2) Total numbers of letters = 14
 3) probability of vowels occurring
 $= \frac{5}{14} \Rightarrow 0.357 \Rightarrow \boxed{0.36}$

The probability of vowels is $\boxed{0.36}$.

d.

Ans:

Total parts : $7 + 3 + 2 = 12$

Zain's part:

$$\Rightarrow \frac{4320 \times 2}{12} = 570$$

Aslam's part:

$$\frac{4320 \times 3}{12} = 1080$$

Ashraf's part:

$$\frac{4320 \times 7}{12} \Rightarrow 2520$$