

GSA MOCK

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SECTION - 11

Question No. 6(a)

$$\text{Sum of 3-digit number} = 15$$

$$\text{Sum 10th and Unit digit} = 12$$

$$\text{Difference b/w 10th and} = 2$$

Unit

$$\text{Let 3-digit number} = xyz$$

$$x + y + z = 15$$

$$y + z = 12$$

$$y - z = 2$$

Now,

$$\frac{y+z}{y-z} = \frac{12}{2}$$

$$\frac{y+z}{y-z} = 6$$

$$2y = 14$$

$$\boxed{y = 7}$$

So,

$$x + y + z = 15$$

$$x + (12) = 15$$

$$x = 15 - 12$$

$$\boxed{x = 3}$$

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$$x + y + z = 15$$

$$3 + 7 + z = 15$$

$$z = 15 - 10$$

$$\boxed{z = 5}$$

Three digit number = 375

$$\begin{array}{l} \text{check} = 3 + 7 + 5 \\ = 15 \end{array}$$

Question No. 6(b)

Pizza sizes ratio = S : M : L
2 : 3 : 4

People = 18

Slice/portion per person = 1 slice/person

Slice weight = 40gms

Price of small pizza = Rs. 320

Slice per person = 1

⇒ Since they are 18 it

means 18 slices are available

Given ratio is

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$$2 : 3 : 4$$

$$\begin{aligned} \text{Sum of ratio} &= 2+3+4 \\ &= 9 \text{ slices} \end{aligned}$$

and if we multiply by 2
to meet slice condition
 $= 18$ slices

Ratio (New) $\times 2$

$$S : M : L$$

$$4 : 6 : 8$$

Now

Small pizza has 4 slices

weight	Price	Price per slice
$\Rightarrow 40 \times 4$	Rs. 320	$\frac{320}{4} = \text{Rs. } 80$
$= 160 \text{ grams}$		

Medium Pizza

$= 40 \times 6$	$\Rightarrow 80 \times 6$
$= 240 \text{ grams}$	$= \text{Rs. } 480$

Pizza Large

$\Rightarrow 40 \times 8$	$\Rightarrow 80 \times 8$
$= 320 \text{ gm}$	$= \text{Rs. } 640$

Total weight

$$\begin{aligned} &\Rightarrow 320 + 240 + 160 \\ &= \boxed{720 \text{ gms}} \end{aligned}$$

Total Price

$$\begin{aligned} &\Rightarrow 640 + 320 + 480 \\ &= \boxed{\text{Rs. } 1440} \end{aligned}$$

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Question No. 6(c)

$$\text{Dia} = 6\text{cm} \Rightarrow R = 6/2 = 3\text{cm}$$

$$\pi \approx 3.17$$

Circumference = ?

area = ?

Circumference

$$= 2\pi r$$

$$= \pi d$$

$$= (3.17) 6$$

$$= 19.02\text{cm}$$

Area

$$A = \pi r^2$$

$$= (3.17) (3)$$

$$= 3.17 \times 9$$

$$= 28.53\text{cm}^2$$

Question No. 6(d)

13, 24, 46, 90, 178, ?

13, 24, 46, 90, 178, 354

$$24 - 13 = 11$$

$$46 - 24 = 22$$

$$178 - 90 = 88$$

Relative difference next and preceding number is $(n \times 2)$

where $n = 11$ as the first difference.

5, 6, 9, 14, 21

5, 6, 9, 14, 21, 30

Sequence of odd numbers are being added in the next number.

Write all steps of problem solving

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Question No. 8

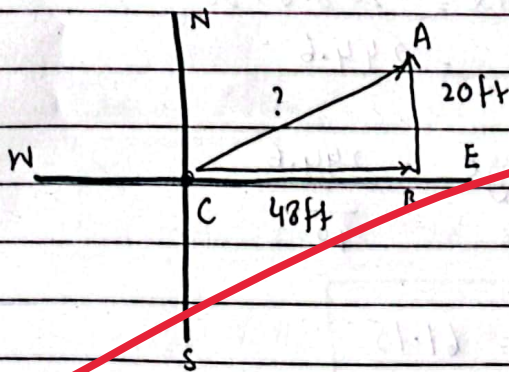
Question No. 8(a)

$$\begin{aligned} \text{Width} &= 60\% \text{ of Length} \\ \text{Length} &= 15 \text{ ft} \end{aligned}$$

$$15 \times (0.60) = 9 \text{ ft}$$

Length = 15 ft
Width = 9 ft

Question No. 8(b)



$$\begin{aligned} (AC)^2 &= (AB)^2 + (BC)^2 \\ &= (48)^2 + (20)^2 \\ (AC)^2 &= (2704) \end{aligned}$$

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$$\sqrt{(AC)^2} = \sqrt{2704}$$

$$AC = 52 \text{ FT}$$

Question No. 8(c)

Students = 52.15
average

Total students = 40

Mark incorrectly entered = 49 instead
of 85

$$\begin{aligned} \text{Total sum} &= 52.15 \times 40 \\ &= 208.6 \end{aligned}$$

$$\begin{aligned} \text{Difference of score} &= 85 - 49 \\ &= 36 \end{aligned}$$

$$\begin{aligned} \text{New total} &= 208.6 + 36 \\ &= 244.6 \end{aligned}$$

$$\begin{aligned} \text{New average} &= \frac{244.6}{40} \end{aligned}$$

$$\text{Average} = 61.15$$

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Question No. 3(d)

People who like vegetable pizza = 37

Chicken pizza = 25

Neither = 3

Total sample space = $37 + 25 + 3$

= 65

Probability for those who like chicken pizza = $\frac{25}{65}$

$$P(CP) = \frac{5}{12}$$

SECTION-I

Question-3

Question No. 3 (c)

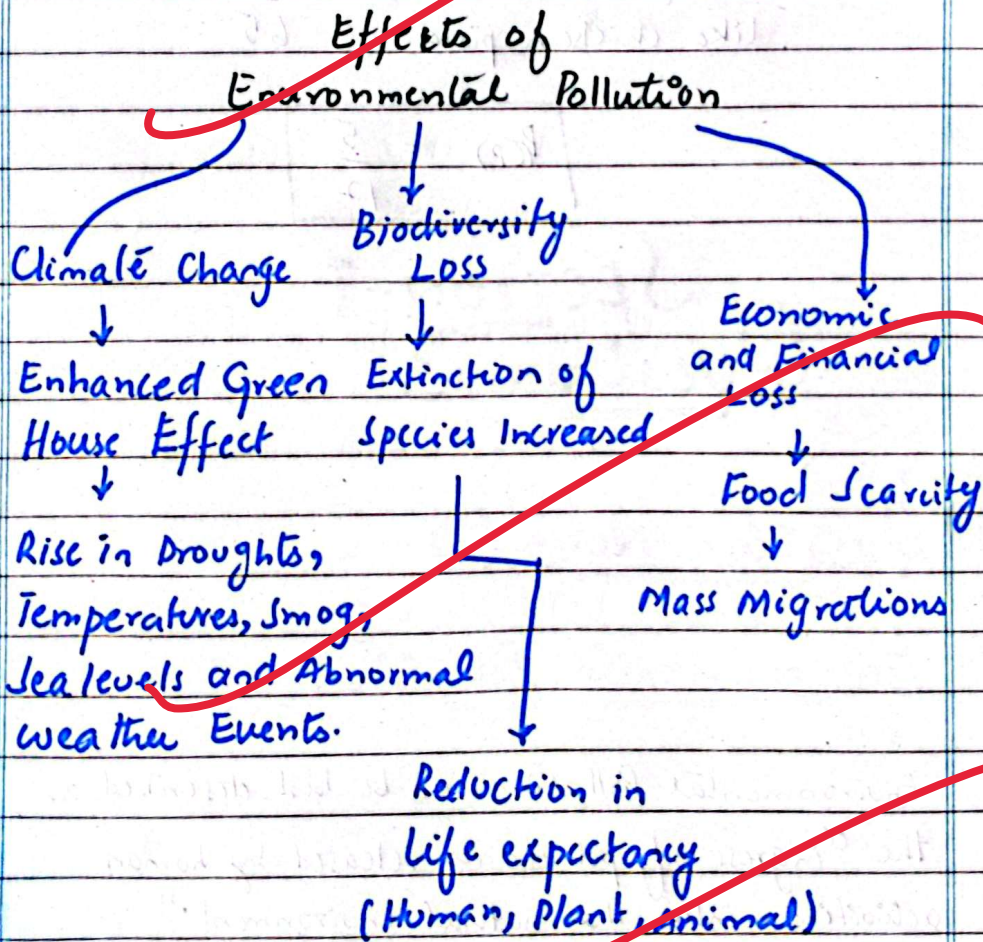
Environmental Pollution

Environmental Pollution can be best described as the "ingress of pollutants released by human activities into the natural environment"

Environmental pollution is caused when toxic chemicals

released as by-products during industrial, domestic or commercial processes into the environment. These toxins are not limited to the harmful gases, but also the solid waste entering the waterways and the garbage burned/dumped on land.

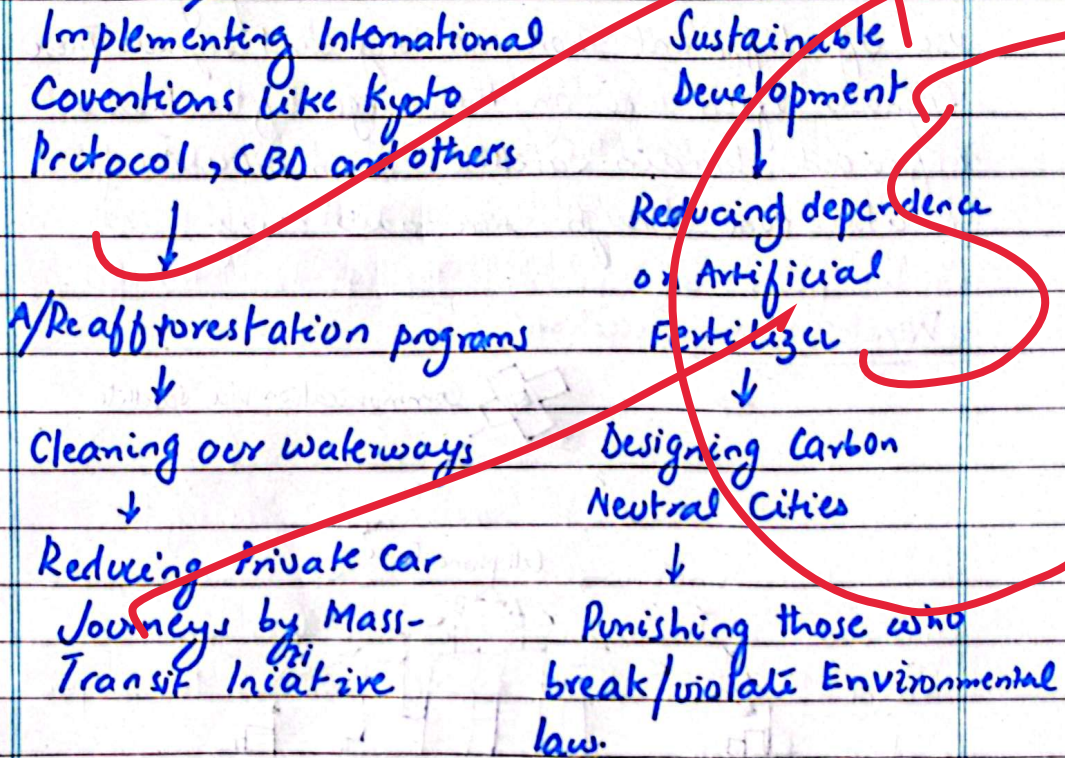
Environmental pollution has become a major problem across the world as today the world is suffering ^{from} catastrophes because of their reckless attitude.



(UNEP-2013)

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Solutions



Question No-3(d)

Wireless Communication

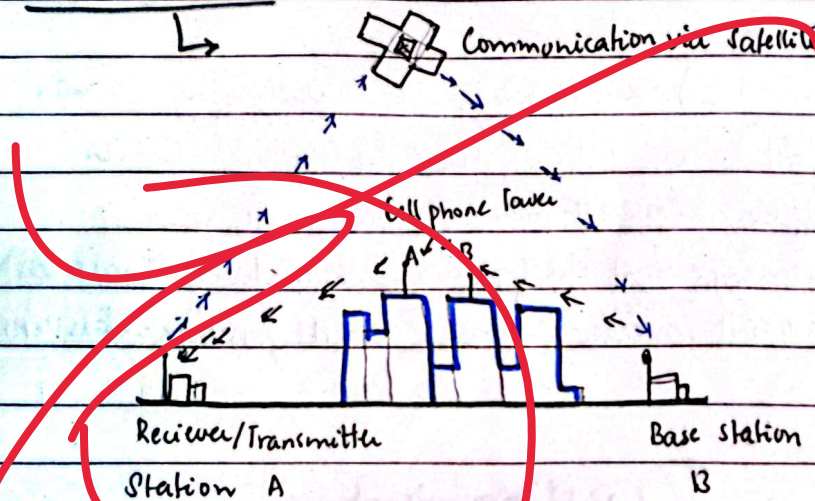
The process of communication that does not require any wired medium to send and receive signals is called wireless communication. Today, wireless communication forms the backbone of all human communication. The most prominent example of wireless communication is the use of cell phones.

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radio, Wi-Fi (Wireless Fidelity) and so on.

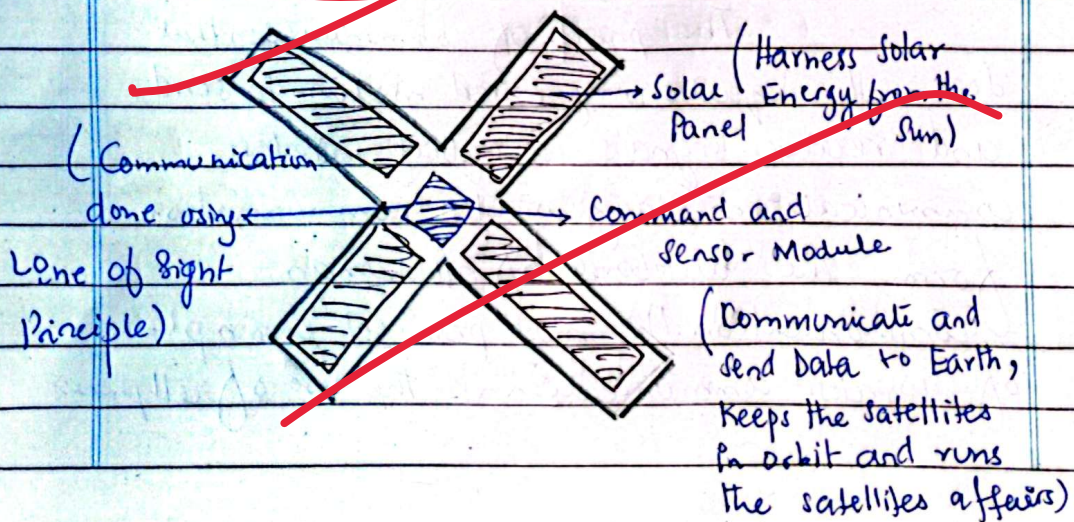
Wireless communication employs the use of different short and long band signals. These signals often are in the range of radio to infrared domain. Satellite communication is also done through radio waves.

Wireless Communication



Working of Satellite

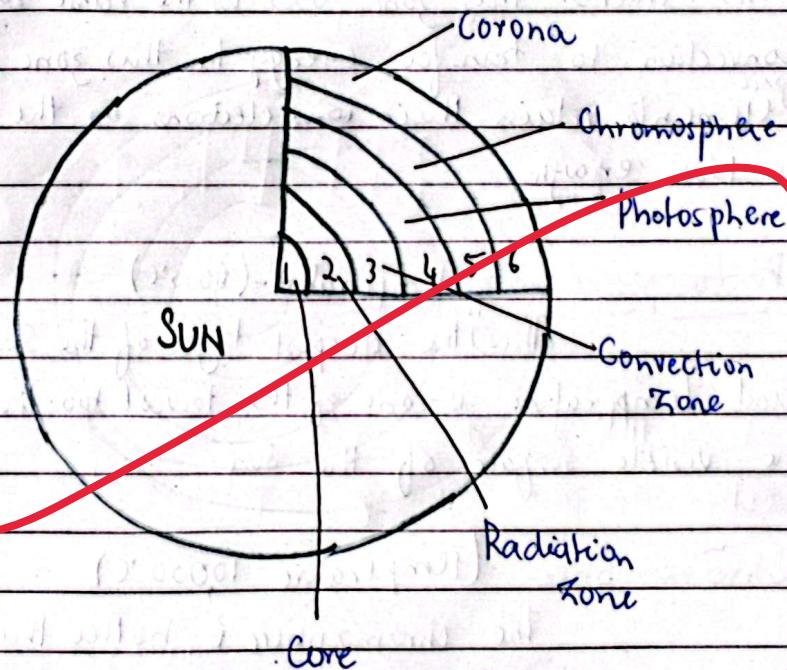
A satellite depending on its usage is placed in either a geostationary or polar orbit.



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Solar panels power the satellite's command and sensor modules. In case of communication satellite, they can act as a giant antenna. The signal it receives from Earth is processed along with other relevant data signatures and sent to the receiver station. The geostationary satellites communicate in the line-of-sight (LOS) of the receiver station.

Question 3(a)



1) Core (Temperature : 15 Million °C)

Centralmost region of the sun. This is where all the fusion reactions between Helium and Hydrogen take place.

The core is also the ^{most} densest part of the Sun.

(2) Radiation Zone :

The energy of the core by the medium of radiation and thermal conduction is transferred from the core to the outside. Energy travels in the form of photons. The photons transfer energy to one another via collisions.

(3) Convection Zone : Temperature: ~~200~~ (2 million °C)

The outermost layer of the Sun's interior. This zone, as the name suggests, convection to transfer energy. In this zone, some ionic elements retain their ions, electrons as the temperature is low enough.

(4) Photosphere : Temperature (6000 °C)

This is the deepest layer of the Sun and temperature is one of the lowest too. This is the visible surface of the Sun.

(5) Chromosphere (Temperature 10000 °C)

The chromosphere is hotter than Photosphere and the colour that it emits is 'Red'. The chromosphere also emits jets of hot gases at extremely fast speed which travel long distances.

(b) Corona (Temperature 2 million °C)

The corona is the 'halo' or the 'crown' of the Sun. The corona is hotter than the photosphere. The corona carries the solar winds produced by the Sun.

Question 3(b)

Tsunami

A Tsunami is a natural disaster that occurs due to the sudden vertical displacement of the ocean floor. Tsunami are the result of earthquakes, land slides or any movement that causes the the ocean floor to rise or fall. When the ocean floor rises, the water also does too. The ^{energy is} carried in longitudinal waves till the shore, where upon impact it disseminates.

Formation of Tsunamis

Earthquakes

When plates of the Earth collide with each other, the ocean floor

Landslides

When land slides large masses of debris enter the water body

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raised or dropped. The resulting potential energy is carried by water till the shore where upon contact, it converts itself and changes/dissipates the energy.

and floor raising the water level. This causes the tsunami to occur and water bed is pushed inland.

Meteor Impact

When a meteor impact the ocean floor, it contains a lot of energy that energy raises the water level resulting in a tsunami.

Sea floor Collapse

A sea floor collapse might happen when the tectonic plates shift causing a large displacement in the water body's level and in turn a tsunami.

Recent Tsunami's

Indonesia (2004)

Indonesia's Bali islands were hit by earthquake and later tsunami.

Japan (2011)

Fukushima Islands were hit by Earthquake and then by Tsunami.

Tonga (2022)

Tonga islands suffered earthquakes and then tsunami.

Mediterranean (2023)

After Earthquake in Turkey-Syria, a tsunami was observed.

Question No. 4

Question No. 4(c)

Food Preservations

Curing

Salt has been used to cure the foods, the salts remove the moisture and then it is left out to dry. This method is traced to the ancient Egyptians. Mainly done on meats.

Drying

The foods are hung out in the open to dry. The bright ^{and heat} from the sun remove the moisture from the foods. It is a bit time taking as curing quickly removes salt moistures.

Freezing

Freezing is another way to preserve foods. Foods are stored in sub-zero temperature where moistures can't liquefy. These temperatures help maintain the molecular structures of the foods.

Artificial Preservatives

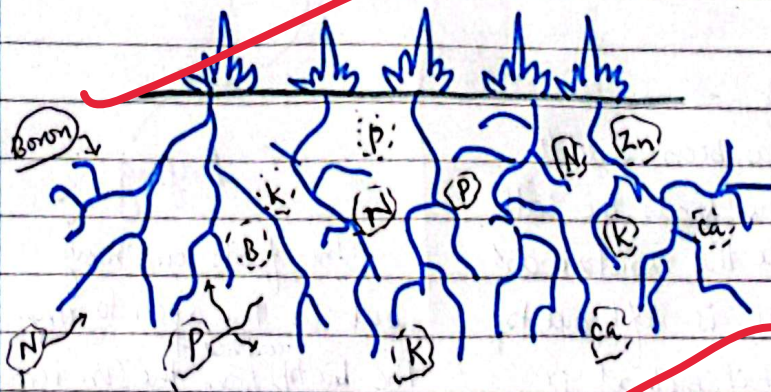
Artificial preservatives are used as an alternative to the natural ones. These artificially increase the food's shelf life and do not allow the food to go rancid.

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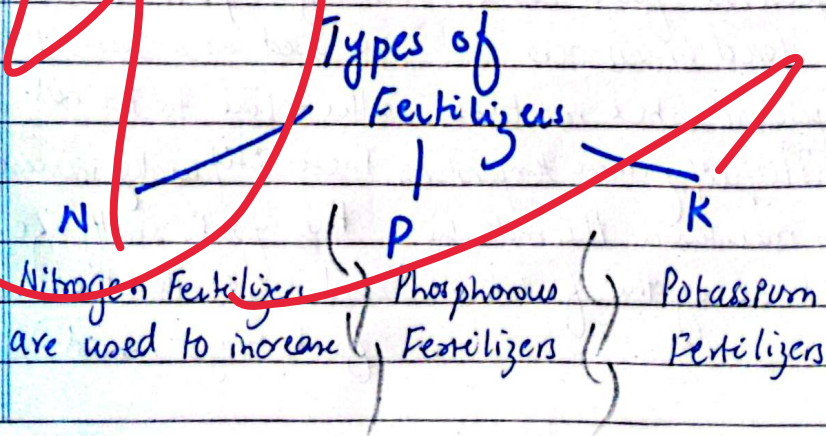
Question No. 4(c)

Fertilizers

Plants need various nutrients to survive and thrive. These nutrients are sourced from the soil itself. In order to increase the soil and plant fertility, fertilizers are used.



Sometimes, due to over farming the soil loses a lot of nutrients. These minerals are then replaced through the use of fertilizers. Fertilizers are used to enhance the mineral and nutrient content of the soil.



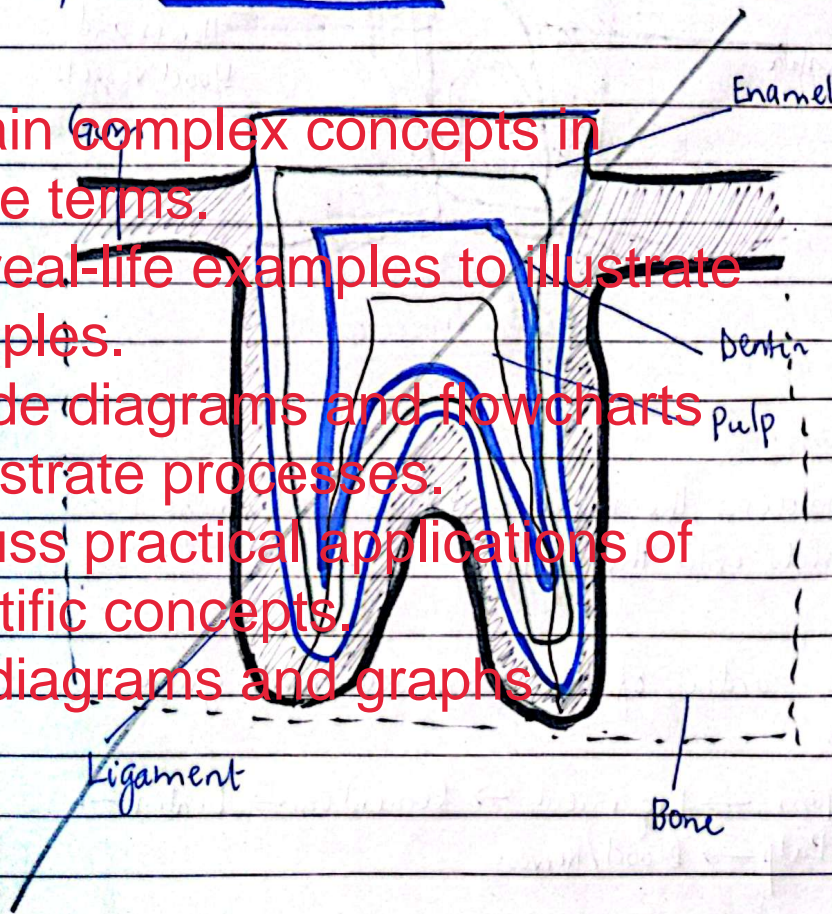
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The relative ^{value} of Nitrogen in the soil. This is the most common type of fertilizer used. } used to increase the phosphorous value in the soil } are used to increase the value of potassium in the soil.

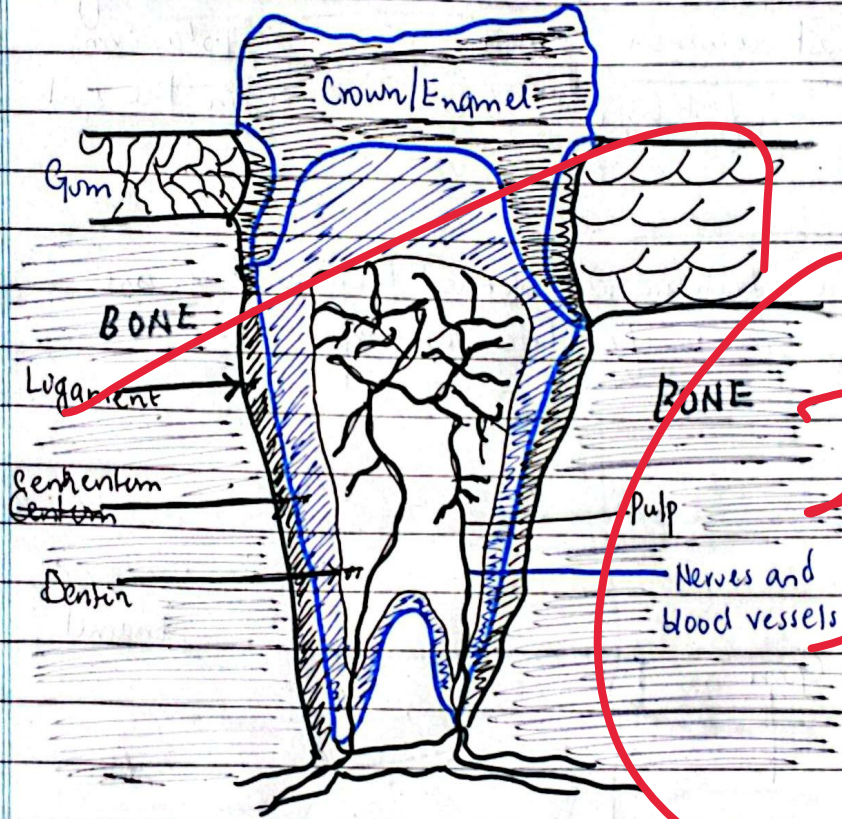
These fertilizers are blended then used as one mixture to fertilize the crop.

Question No-4(d).

Explain complex concepts in simple terms.
Use real-life examples to illustrate principles.
Include diagrams and flowcharts to illustrate processes.
Discuss practical applications of scientific concepts.
Use diagrams and graphs



Question No. 4(d)



Tooth Anatomy

Gum:

Contains the nerve and blood vessels; these blood vessels enter the pulp.

The order of the cross section is given

Gum → Ligament → Cementum → Dentin →
Pulp → Blood/Nerves.