PART # II
Section - I

Q No 3

a) Answer:

Chemical Bonds in Atoms:

Every substance in the universe try to obtain stability. Similarly, atoms consists of various valance shell electrons. To achieve stability, they must attain stable no. of $\bar{e}$ in its valence shell. These no. of $\bar{e}$ can be determined using $2n^2$ formulae. where n = no. of valence shell.

$n=1 \rightarrow 2(1)^2 = 2(1) = 2$

$2(2)^2 = 2(4) = 8$, so, on.

So, to achieve stability, fill their valence shell, atoms form bonds.

Covalent Bond in Water:

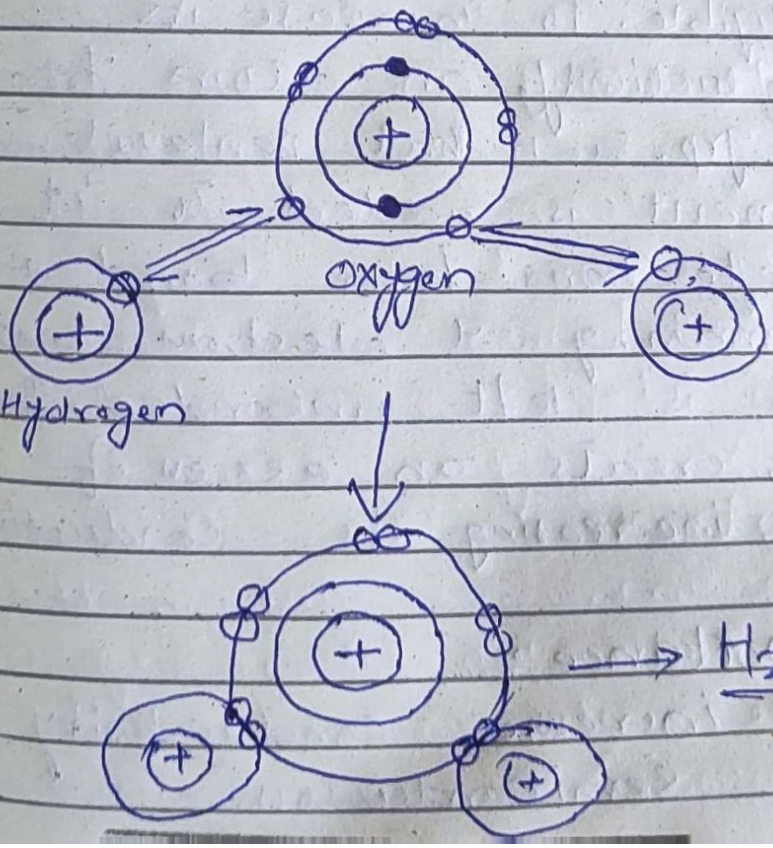
Lets understand Covalent Bond.

"A bond formed by mutual sharing of $\bar{e}$ b/w

atoms is called covalent bond"
In this type of bonding sharing of $\bar{e}$ took place.
For example:

Water (H_2O).

O have 6 valence $\bar{e}$. To fill its valence shell, it must gain 2$\bar{e}$, to attain stable number of 8$\bar{e}$.
On other hand, Hydrogen have 1 valence $\bar{e}$, To achieve stable state, it must gain 1$\bar{e}$, to achieve 2$\bar{e}$.
Therefore, both atoms come together to share $\bar{e}$ to achieve their desired state.



and heated to an extent that it's insoluble in water.

c) Answer:

Global Warming:

"The increase in average global temperature is called global warming."

Merits of Global warming:

i) Decrease in mortality from cold waves:

The inc. in temparature can help to overcome the mortality rates in northern hemispheres due to cold waves.

ii) Early Spring:

The increase in global temperature means early arrival of springs which allow farmers more time to grow crops.

iii) New trade route:

The melting of Arctic Sea is opening new trade routes in the northern hemisphere.

Demerits of Global Warming:

i) Floods:

Increase in global temp. results in melting of glaciers and intense in rains result in intense flooding. For example, Pakistan faced serious flooding in 2022.

ii) Rising Sea levels:

Due to melting of snow caps and melting glaciers the sea levels are rising. which means the coastal population is under threat. For instance, Indonesia is building new capital to move their costal capit, Jakarta.

iii) Heat waves:

Another major demerit of global warming, is increasing heat waves which is a direct threat to human life. During Hajj pilgrimage 2024, 1500 people died due to intense heat.

iv) Wild fires:

Heat waves result in intense wild fires. In recent years, we witness intense fire breakouts in forests around the world. From Australia to Turkey to Canada every part of world witness wild-fires.

Critical Analysis:

The demerits of global warming outface the merits. The merits of global warming are short-term and confine to some regions, while the demerits have threatened human life on earth.

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d) Answer:

Polio:

Viral infectious disease caused by Polio virus.

Symptom:

→ Fever, aches

→ In acute stages, polio-myelitus cause the

paralysis of one or 2 limbs.

Prevention:

→ Polio virus vaccine.

Risk factors:

→ Flawed water & Sanitation system.

→ no access to vaccines.

Challenges to eradication of Polio in Pakistan:

i) Worst Sanitation System:

One of the major factor responsible for spread of polio in Pakistan is its worst sanitation system. This allow the Polio to breed and spread to other population.

ii) Vaccination barriers:

There are certain barriers to vaccination in Pakistan. The religious misinterpretation results in creating a phobia in masses. Moreover the target killing of Polio workers

also hampered the procen of polio.

iii) Non-Serious behaviour of Parents:

It's the duty of parents to safeguard their child from life threatening disease. But they create hurdles and believe in conspiracy theory expose their child to ~~conta~~ viral infection.

iv) Over-Population:

Pakistem is also facing serious population growth. Which results in over congestion and poor governance its therefore difficult for the under staffed health sector to cater the manes.

Q No 4

a) Answer:

Bile:

A Chemical Secretion ~~is~~ produced by liver is called ~~Cell~~ Bile.

Storage:
→ Bile store in gall bladder located in abdominal cavity, under liver.

Composition:
→ Bile is mostly consists of salts.

Secretion Area:
→ It secreates in Duodenum the first part of small intestine.

Function:
→ i) Neutralisation: one of the major function of Bile is neutralisation of acidic chyme receive from stomach.

→ ii) Saponification: another important role of bile is the degradation and washing away of fats and lipids.

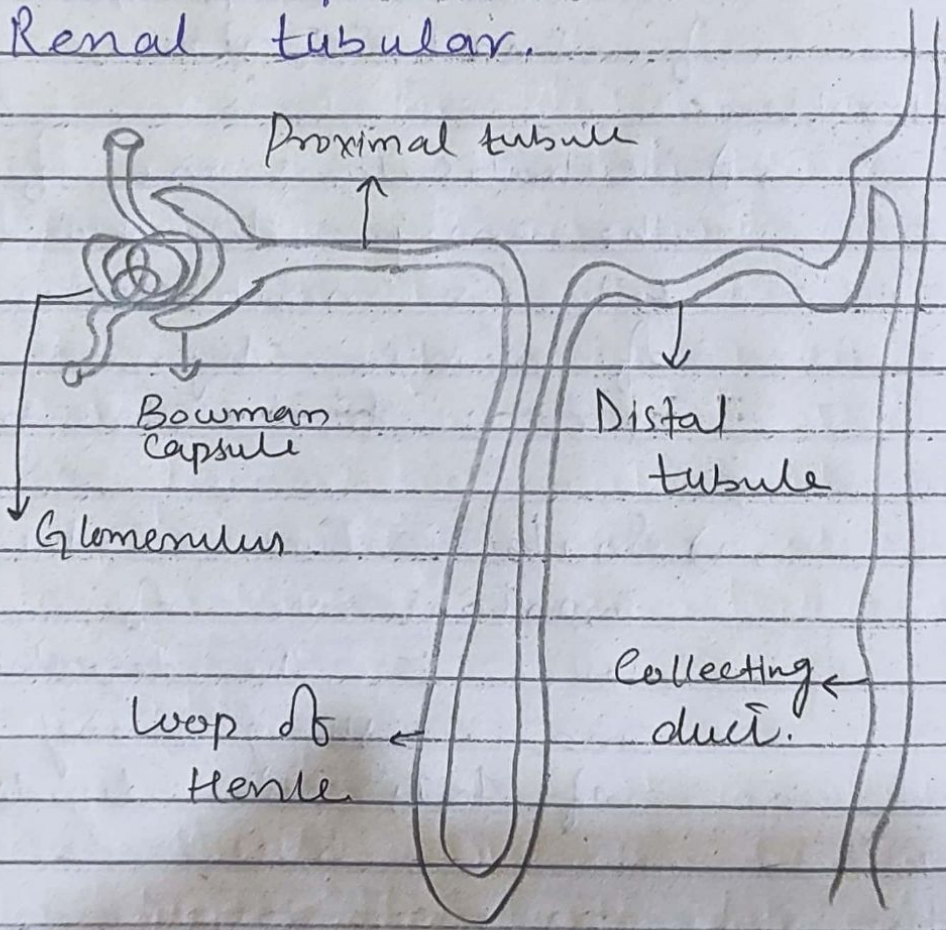
Answer:
Role of Kidney in excretion:
Kidney is one of

the major excretory organ in human body. Kidney is made up of Nephrons. These nephrons are responsible for filtering and cleaning human blood, removing excretion

Structure of Nephron:

Consists of 2 major parts.

i) Renal Corpuscular
ii) Renal tubular.



Glomerulus: The blood filters at this stage. Due to high pressure all the plasma filter out.

Bowman capsule: It catches the filterate absorb majority of portion but large molecules and cells are stop.

Renal tubules: They reabsorb the essential nutrients and excess thus in the filterate and unwanted material is removed through collecting duct.

Answer:

Methods of Solid Waste management:

i) Incineration:

The process by which the solid waste, particularly medical solid waste, is burned at high temperature in controlled environment.

2) ~~Ener~~

Waste To Energy:

In this process, waste is converted into beneficial heat. which is then utilize to produce energy. This method is practice in most of developed world and some perts of developing world.

3) Composite:

The organic waste is converted to fertilizer by threating them with certain chemicals. It can be perform at home, by utilizing kitchen waste which can be used for gardens and also at large scale it can utilize to produce organic fertilizers.

4) Landfill:

The process in which the solid waste is dumped in open space in controlled environment. It is least prefered but mostly practised method of deposing solid waste.

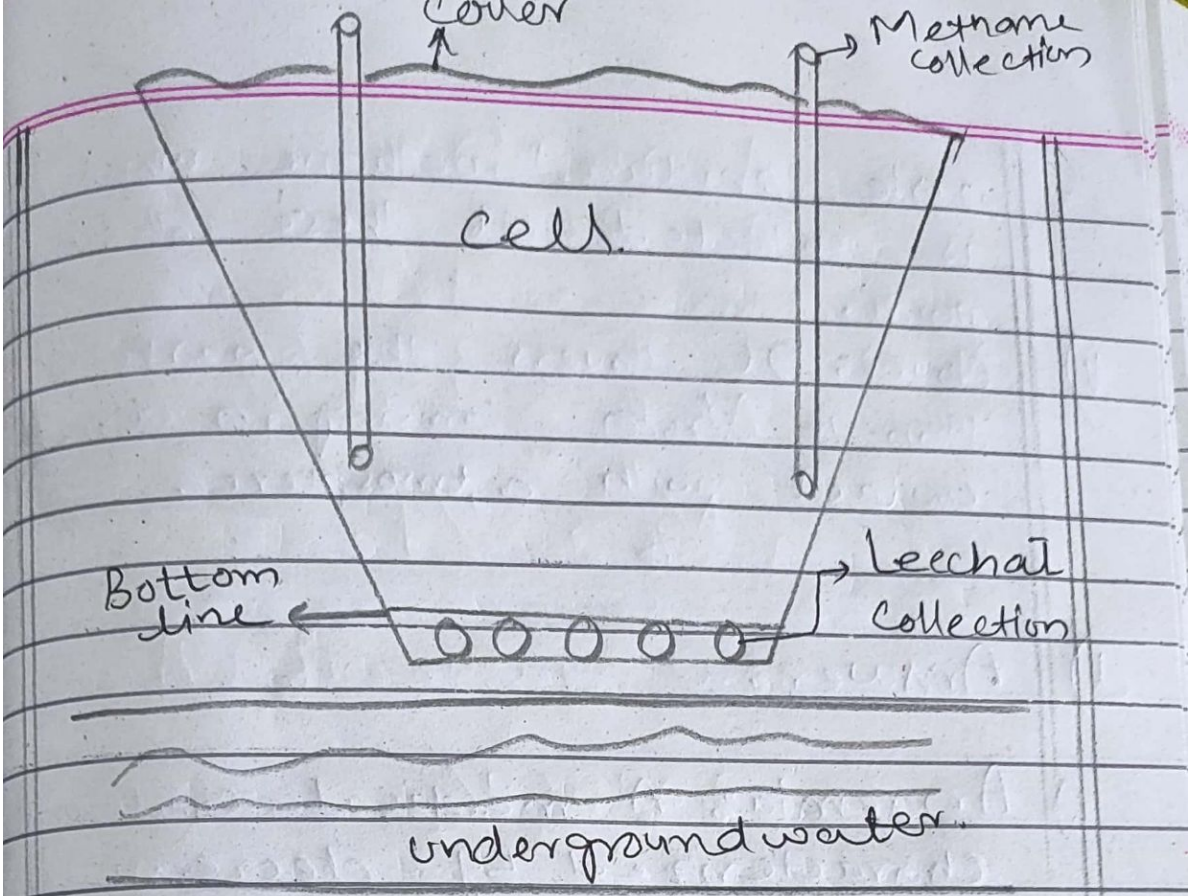


Fig: Landfill Site

Parts of Landfill:

i) Bottom line: It separates site from underground water. Made of solid concrete and some other chemicals.

ii) Leachate collection: Sludge, semi solid waste formed out of solid waste is collected through collection pipes.

iii) Cell: This is where solid waste is dumped.

iv) Methane collection: The solid

waste produce methane which is collected at these collection point.

v) Cover: It covers the waste, to stop it from coming in direct contact with atmosphere.

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d) Answer:

i) Anaemia: A medical condition characterized by decrease in RBCs and Haemoglobin.

ii) Appendicitis: Inflammation of Appendix, a small portion connected with large intestine, is called appendicitis.

iii) Spleen: A lymphatic system organ located in abdominal cavity help to combate antigens through production of WBCs.

iv) Myopia: Also called Short-sightedness, is an eyesight disorder characterized by difficulty to clearly see objects at distant.

Section # IV.

Answer:

Given data:

$$A:B:C:D = 4:7:3:1$$

$$A = 50 + C$$

Required:

The number of "B" blocks = ?

Solution:

As given:

$$A = 50 + C$$

let $C = x$ ——— (i)

$$A = 50 + x$$ ——— (ii)

As given;

$$A:C = 4:3$$

So

$$A/C = 4/3$$ ——— (iii)

Put (i) and (ii) in (iii)

$$\frac{x + 50}{x} = \frac{4}{3}$$

$$4x = 3x + 150$$

$$x = 150$$

Put in eq (ii)

$A = 50 + 150$

$A = 200.$

Now

$A : B = 4 : 7$

$A/B = 4/7.$ — iv

Put value of A in (iv)

$$\frac{200}{B} = \frac{4}{7}$$

$$\frac{350}{\cancel{1400}} = \frac{4B}{4}$$

$$\boxed{B = 350}$$

Result:

No. of B-blocks are 350.

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b) Given:

Original cost = $80

Discount = 15%.

Sale = 10%.

Required:

Final price = ?

Solution:

Price after discount.

$$= \frac{15}{100} \times 80$$

$$= 12$$

So price will be after discount

$$80 - 12 = \boxed{68}$$

Now price after sale tax.

$$= \frac{10}{100} \times 68$$

$$= 6.8$$

So price will be

$$68 + 6.8 = \boxed{74.8}$$

Conclusion:

The final price of shoe will be 74.8.

c) Given data:

Distance = 42 Km
Speed = 36 Km/hr

Req:

Time = ?

Soln:

As we kenown that

$$S = D/t.$$

$$t = D/S.$$

$$t = \frac{42}{36}$$

$$t = 1.16$$

Conclusion:

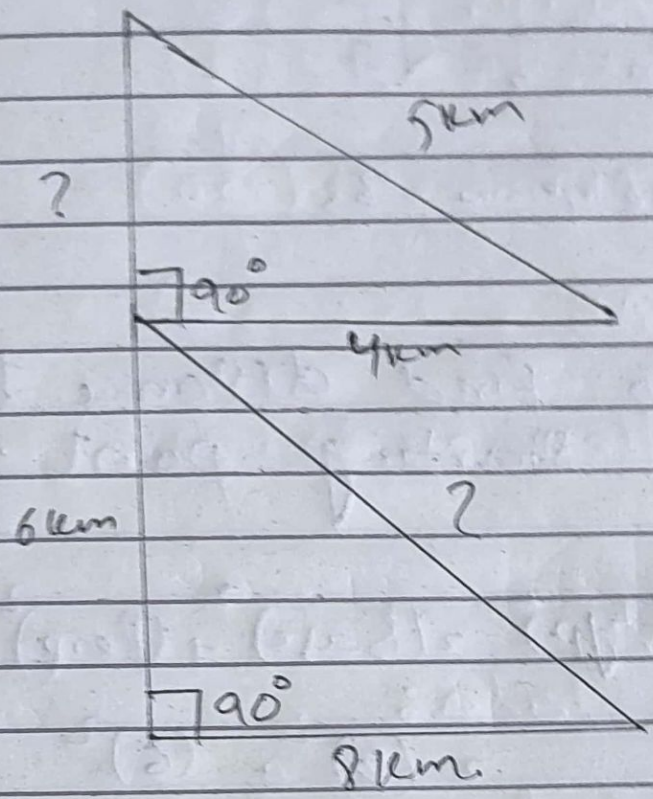
So, train will arrive at 4:1.16 pm.

d) Answer:

i) Supritendent

ii) White

Given:



Req:

How long he travelled = ?

How far from starting point = ?

Solution:

First, we have to find the perp of first triangle.

$Perp^2 = Hyp^2 - Base^2$

$Perp^2 = (4)^2 - (5)^2$

$Perp^2 = 25 - 16$

$\sqrt{Perp^2} = \sqrt{9}$

$perp = 3$

Now;

To Find distance from starting point.

$(Hyp)^2 = (Base)^2 + (Perp)^2$

$= (8)^2 + (6)^2$

$= 64 + 36$

$= \sqrt{100}$

$\boxed{Hyp = 10}$

Now, To calculate total distance traveled.

$4 + 5 + 3 + 6 + 8 + 10 = \boxed{35}$

Result:

Total distance = 35 km

Distance from starting point = 10 km

Given:

Total amount = 8000.

Hassan = 1/3rd Ali

Ali = 5 Akbar

Akbar = 3 Nasir

Nasir = Shehbaz.

Req:

Shares of each = ?

Soln:

Let Nasir share be (x)

So

Nasir = x

Shehbaz = x

Akbar = 3x

Ali = 15x

Hassan = 5x.

Total Shares = 25x.

$25x = 8000$

$x = \frac{8000}{25}$

$x = 320.$

So

Nasir = 320

Shehbaz = 320

Akbar = 3(320) = 960

Ali = 15(320) = 4800

Hassan = 5(320) = 1600

d) Answer

Given data:

Total amount = 4320.

Zain = 2x

Aslam = 3x

Ashraf = 7x.

Req:

Distribution of amount

Soln:

So total shares are

12

12x = 4320

$x = \frac{4320}{12} = 360$

Zain = 2(310) = 720

Aslam = 3(360) = 1080

Ashraf = 7(360) = 2520

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c) Answer.

Given

radius = 7m

Req:

Surface area = A = ?

volume = V = ?

Soln:

As we known that

Area of Sphere = $4\pi r^2$

$= 4(3.14)(7)^2$

$= 4(3.14)(49)$

$= (12.5)(49)$

$= 615.4$.

Now.

Volume of Sphere =

$4/3 \pi r^3$

$= \frac{4}{3}(3.14)(7)^3$

$= (4.18)(343)$

$= \boxed{1433.74.}$