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SECTION - II

(Q#07)

(a)

Diameter of sphere = $d = 14 \text{ cm}$

$$\pi = 22/7$$

$$r = \frac{d}{2} = \frac{14}{2} \text{ cm} = 7 \text{ cm}$$

Volume of sphere = ?

$$\text{Volume of sphere} = \frac{4}{3} \pi r^3$$

$$= \frac{4}{3} \times \frac{22}{7} \times (7)^3$$

$$= \frac{4}{3} \times \frac{22}{7} \times 7 \times 7 \times 7$$

$$= \frac{88 \times 49 \times 7}{3}$$

$$= \frac{4312}{3} = 1437.3 \text{ cm}^3$$

$$\begin{array}{r} (3) \\ 88 \\ \times 49 \\ \hline 792 \\ 352 \times \\ \hline 4312 \end{array}$$

(b)

Total savings of friends = Rs. 25000

Ratio

$$= 1:2:3:4:5$$

Smallest share

$$= ?$$

Sum of ratios

$$= 1+2+3+4+5 = 15$$

Smallest share

$$= \frac{\text{Smallest ratio} \times \text{Amount}}{\text{Sum}}$$

$$= \frac{1}{15} \times \frac{5000}{3}$$

$$= 5000/3 = 1666.6 \text{ Rs.}$$

(c)

ii- 3, 5, 7, 11, 13, —

$$\begin{array}{ccccccccc} 3 & 5 & 7 & 11 & 13 & 15 \\ \underbrace{\quad} & \underbrace{\quad} & \underbrace{\quad} & \underbrace{\quad} & \underbrace{\quad} & & & & \\ 2 & 2 & 4 & 2 & 2 & & & & \\ +0 & +2 & -2 & +0 & & & & & \end{array}$$

X

$$= \underline{15}$$

Series is Prime Numbers

3, 5, 7, 11, 13, —

3, 5, 7, 11, 13, 17

A 2, 6, 18, 54, 162, 486 (unfit NO) = 2

$$\begin{array}{ccccccccc} 2 & 6 & 18 & 54 & 162 & 486 \\ \underbrace{\quad} & \underbrace{\quad} & \underbrace{\quad} & \underbrace{\quad} & \underbrace{\quad} & & & & \\ \times 3 & \times 3 & \times 3 & \times 3 & \times 3 & & & & \end{array}$$

= All numbers sequence is correct.

(d)

Triangle sides = 8cm, 12cm, 13cm

Angles = ?

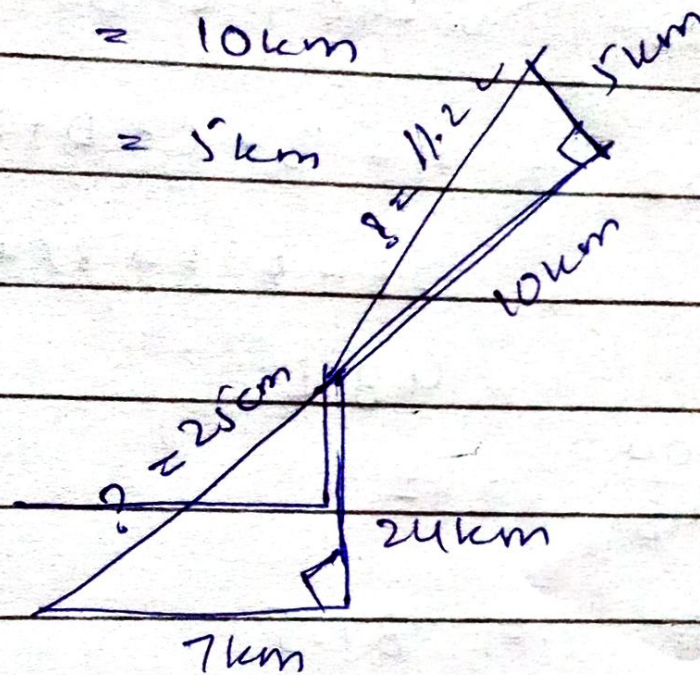
(Q #8)

(a)

Path covered = 7 km + 24 km

Next path = 10 km

Next = 5 km



$$\text{Hyp}^2 = (\text{Base})^2 + (\text{Alt})^2$$

$$= (7)^2 + (24)^2 = 625$$

$$= \sqrt{625} = 25$$

$$\text{Hyp}^2 = (\text{Base})^2 + (\text{Alt})^2$$

$$= (10)^2 + (5)^2$$

$$= 100 + 25$$

$$\text{hyp} = \sqrt{125} = 11.2$$

$$\text{Total covered distance} = 7 + 24 + 10 + 5$$

$$= 46 \text{ km}$$

$$\text{Distance from start} = 25 \text{ km} + 11.2 \text{ km}$$

$$= 36 \text{ km}$$

(b)

Total amount = Rs. 9000

$$A = \frac{1}{2} B, B = 3C, C = 4D, D = 2E, E = F$$

$$A = \frac{1}{2} \times 3 \times 4 \times 2 \times E \quad B = 3(4(2E)) \quad D = 2E \quad E = F$$

$$A = 12E, B = 24E, C = 8E, D = 2E, E = F$$

$$9000 = A + B + C + D + E + F$$

$$= 12E + 24E + 8E + 2E + E + E$$

$$= 48E$$

$$\frac{9000}{48} = E$$

$$E = 187.5$$

$$A = 12E = 12 \times 187.5 =$$

$$F = E = 187.5 \text{ Rs}$$

$$D = 2E = 375 \text{ Rs}$$

$$C = 8E = 1500 \text{ Rs}$$

$$B = 24E = 4500 \text{ Rs}$$

$$A = 12E = 2250 \text{ Rs}$$

(c)

Rectangle length = 8 cm

width = 6 cm

height = 4 cm

Surface Area = ?

Volume = ?

$$V = l \times w \times h$$

$$V = 8 \times 6 \times 4 = 48 \times 4$$

$$= 192 \text{ cm}^3$$

$$\text{Surface Area} = 2(l \times w + l \times h + w \times h)$$

$$= 2((8 \times 6) + (8 \times 4) + (6 \times 4))$$

$$= 2(48 + 32 + 24)$$

$$= 2 \times 104 = 208 \text{ cm}^2$$

$$\begin{array}{r} 104 \\ \times 2 \\ \hline 208 \end{array}$$

(d)

$$x + y = 72 \text{ kg} + 50 \text{ kg} \quad \text{--- (1)}$$

$$x + y = 61 \quad \text{--- (2)}$$

$$x + y = 122 \frac{1}{2} \text{ kg} = 61 \text{ kg}$$

$$x + y = 61 \quad \text{--- (iii)}$$

$$x + y + z = 67 \quad \text{--- (iv)}$$

By subtracting

$$\begin{array}{r} x + y + z = 67 \\ - x + y = 61 \\ \hline \end{array}$$

$$z = 6 \text{ kg}$$

Consumption of Anna = 6 kg.

Qed

SECTION-II

(Q#03)

-(A)-

Why Cells form organelles?

Cell:-

Cell is the basic structured and functional unit of life. It is basic to all human structures and functions. It is smallest unit of life.

Organelle:-

- Organelle are components and sub components present within cells.
- These perform specific functions assigned to them. e.g ribosomes for proteins.

Why organelles :-

- It acts as division of labour.
- Function specificity is ensured.
- Function efficiency is maintained.
- Cell structure become organized.
- Cells function is more mature now.

- To avoid disorganization in function.
- To enhance speed of all functions.

Mitochondria in human cell.

Mitochondria is an organelle present in cell. Its function is very important in cell. It is known as 'Power house' of the cell.

Significance

- It is vital to human/cell life.
- Power house of cell.
- Produce energy in form of ATP.
- This energy is supplied to all parts of body.
- Fulfills ^{energy} demand of whole body.

Critical analysis:-

Cell has to form organelles to maintain structural and functional integrity. Mitochondria is crucial to life.

Conclusion:-

Organelles are sub components in

Cells performing specific cell function,
whereas mitochondria being vital
organelle act as power house of cell.

(b)

Doping.

Process of use of illegal
way of doing something - Such
as doping of semiconductor by adding
impurity to it.

Types of Semiconductors.

There are two types of semiconductor

1. Intrinsic 2. Extrinsic

→ Intrinsic.

- It is pure form of semiconductor
- Number of free electrons are as no of holes.
- Conductivity is low.
- Example $\Rightarrow$ Silicon

→ Extrinsic.

It is impure form of semiconductor.
More free electrons because of doping.
Conductivity is high

- Example: N type semiconductor

(C)

Volcanic eruption.

It is aggressive discharge of gases, Steams and rock fragments from beneath of surface of earth.

Merits.

- It release energy from beneath of land.
- Temperature of deeper surface is reduced.
- It may comes with fossils.
- It enhance quality of fertility of land.
- Economic benefits.

Demerits.

- It may cause earth quakes.
- It damages the surface of land.
- It release huge amount of gases on surface.
- It increases the temperature of surrounding.
- Health Problems.
- Economic burden.
- Climate Change.

Conclusion.

It is a kind of natural Change in

earth and it constitutes some risks such as economic and climate benefits as well as it has some elements such as economic burden as well as health and climate related issues.

(d)

Dengue

It is a kind of high grade fever which is caused by the bite of mosquito (Aedes) which was already affected by the virus known as Flavivirus, which is transmitted to human.

Causative agent.

infected.

Flavivirus by bite of Aedes Mosquito

Symptoms :-

- High grade fever
- Peri orbital pain
- Joint pain
- Reduced Platelets - in blood.
- Body Rash
- Severe headache.

→ Remedies

To Prevent

- Clean dry place of living.
- Complete body covered.
- Use of mosquito repellents.
- Use nets for bedtime.
- Cover water reservoirs.
- Avoid aimless walking outside.

To Treat

- Take bed rest.
- Maintain hydration and nutrition.
- Fluid & electrolyte balance.
- Pain management → ~~anti~~analgesics.
- Fever management → antipyretics.
- Skin care.
- Hospitalisation.
- Medication.
- May require blood transfusion for platelets.

→ Conclusion

Dengue is high grade fever caused by flavivirus entered in body by aedes mosquito, can be prevented by ^{pro}Carbonyl masune and should be treated as early as possible.

(Q #04)

(a)

Chlorophyll

Plant kingdom include all plants
present on surface of earth and all
these plants have green pigment

"Chlorophyll" in them. Classified as

Classification:

→ **Thallophyte**: Lowest plants.

Not differentiated body design.

→ **Bryophyte**: Small terrestrial plants.

Differentiation in design.

→ **Pteridophyta**: Oldest plant

It has vascular system.

→ **Phanerogamae**: Seed bearing.

vascular system, stem, leaves and
roots.

• **Gymnosperm** → have naked
seed, not covered → Pine tree.

Monocots
(single seed)

Dicots

(two seeds)

• **Angiosperm** → have covered
seeds to form fruits.

(b)

Ribosomes

Organelles of human cell which help in the formation of synthesis of protein for body.

How it form Protein

mRNA $\rightarrow$ tRNA $\rightarrow$ rRNA

Ribosomes form protein by reading message of mRNA and translating ~~into~~ it by transferring amino acids by given directions of codon till stop codon arrives.

$\rightarrow$ Ribosome assemble on mRNA
Amino acid are linked $\rightarrow$ amino acid form protein by reaction
Catalyzed by ribosome $\rightarrow$ Translation
Then Termination at stop codon.

Conclusion:-

Ribosomes are factory of protein synthesis.

(3)

Solid waste management.

It can be done by variety of ways.

1- Dumping $\rightarrow$ wasting solid at any deeper place.

2. Compositing $\rightarrow$ wasting in deeper place & then covering.

3- Burial $\rightarrow$ Digging the place and then wasting solid here.

4. Tipping $\rightarrow$ Larger dig in place for large quantity.

5 - Incineration $\rightarrow$ Burning of waste.

6 - Controlled Tipping, smaller dig for small quantity of solid.

Conclusion.

There are variety of ways to discard solid waste, each of which has merits and demerits and should be utilised cautiously.

(d)

Hydrometer.

Device used to measure the density of liquid / fluid.

Epicentre.

Point of origin of earthquake or central part of damage.

Eye wall of cyclone.

Focus point of cyclone, from which it originates.

Deep Focus.

A point in place or time which is under high influence.

Light year.

Distance taken by light to reach on surface of earth.