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PART # II
Section # I

Q No 2.

a) Answer:

Dengue:

It is a viral disease, which is spread through mosquito.

Causative Agent:

The causative agent of Dengue is Dengue virus.

How it spread?

It is spread mainly by mosquitoes of Aedes genus. The primary mosquitoe involves is Aedes Aegypti, esp the female of the specie. It carries the virus in its gland, whenever it bites a person it transmits the virus to that person.

Symptoms:

The Symptoms includ:

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- Severe body pain
- High grade fever
- Nausea
- Vomiting
- Swollen glands
- Pain behind eye balls
- Rashes etc.

Prevention:

Prevention of Dengue involves vector control. Following methods must be employed to overcome spread of Dengue

1) Use of Mosquitoes net, esp in vector intested area.
2) Use of mosquitoes repellent.
3) Use of Pesticides in stranded water.
4) Mosquitoe killing sprays at municipality level.
5) Solid waste must be deposed off properly.
6) Man awarness to curb the spread of disease.

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c) Answer:

Mitochondria:

It is an essential organella of eukaryotic cell playing vital role in energy making, required for functioning of the cell.

Structure:

⇒ It has a double membranous structure.

⇒ Outer membrane is smooth, while inner membrane is folded.

⇒ The folds form inside the outer membrane is called cisternea.

⇒ These membrane contain electron pumps, which are crucial for its function.

⇒ It also contain some DNA, similar to a prokaryotic cell, showing its prokaryotic origin.

Functions:

1) Site of critical step of respiration process.

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2) Linked reaction occur in spaces of cisternae.

3) Major procen Kreb cycle occurs in matrix of mitochondria, generating maximum amount of ATPs.

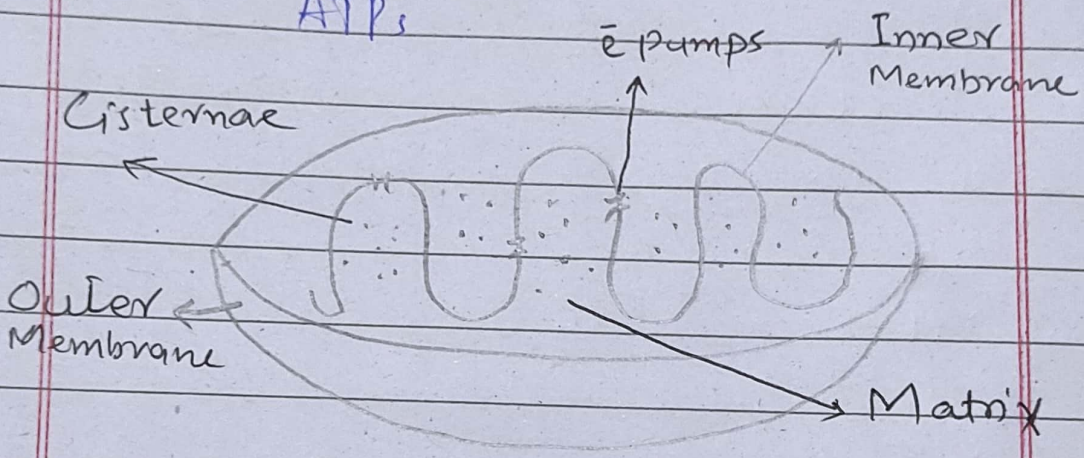

Fig: Mitochondria

Why it is the power House:

It is the power house of cell because of the production of ATPs in it during cellular respiration. Kreb cycle took place in the matrix of mitochondria. During this procen net 36 ATPs are generated

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which makes it the largest ATP producing orgeneller.

d) Answer:

Covalent Bond:

The bond formed by sharing of ē between two atoms to achieve stability is called covalent bond.

Explanation:

Atoms with deficient electrons in valence shell try to complete their valence shell by forming bond. These bonds can be form by many way. One is by sharing of ē, when two atoms share their electrons, each achieving stability, is called Covalent bond.

Types of Covalent Bond:

i) Single Covalent Bond:

The covalent

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bond in which only one $\bar{e}$ is shared between 2 atoms is called single covalent bond.

For example:

Bond between Hydrogen and Hydrogen to form (H_2).

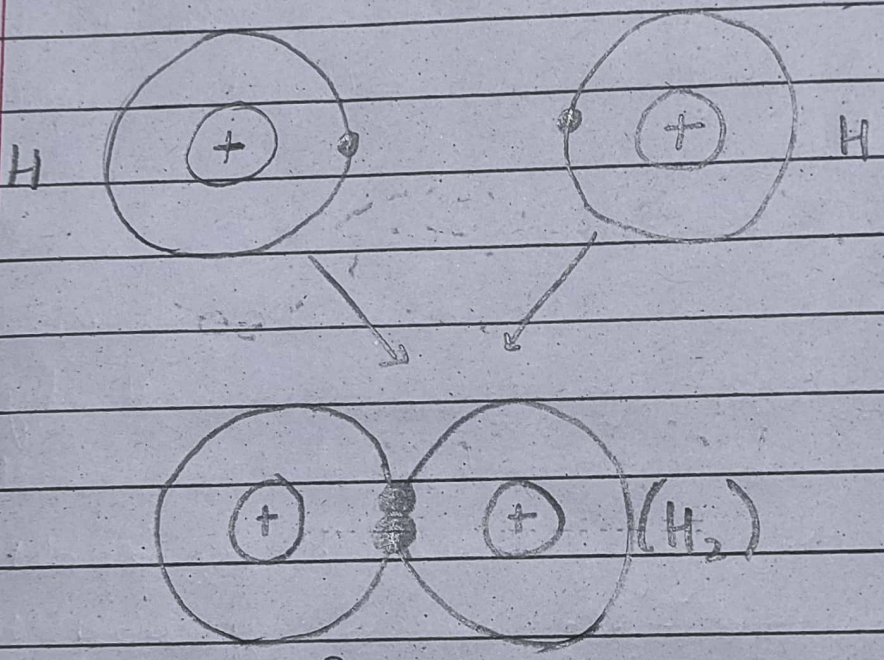

Fig: Single Covalent Bond.

Double Covalent Bond:

The type of covalent bond in which two electron are shared to form a covalent bond is called double covalent bo

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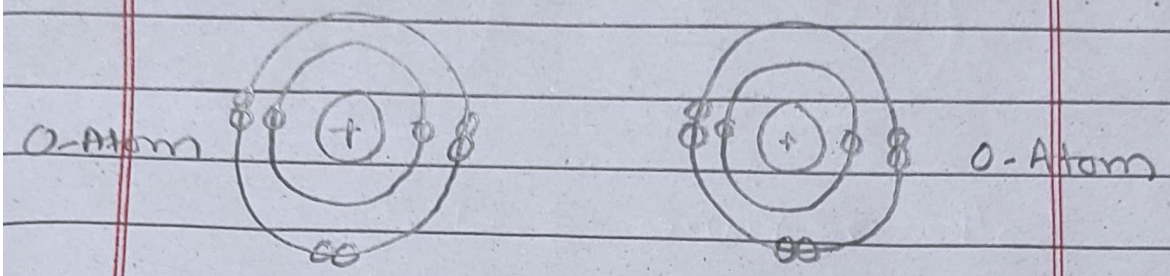
Example:

Double covalent bond exists in O_2.



Both requires two electrons.

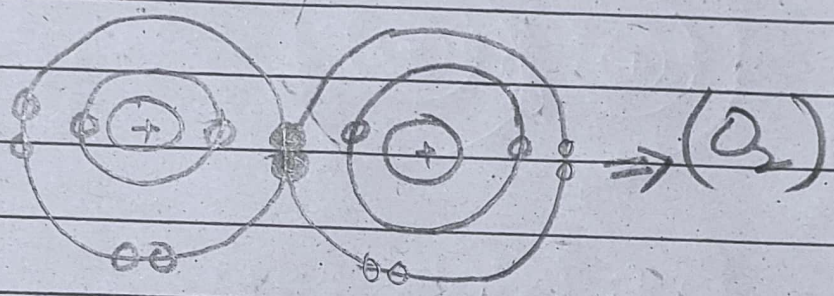


Fig: Double Covalent Bond.

Triple Covalent Bond:

It is formed by sharing of 3 electrons between 2 atoms.

Example:

It is shown by nitrogen, where each atom

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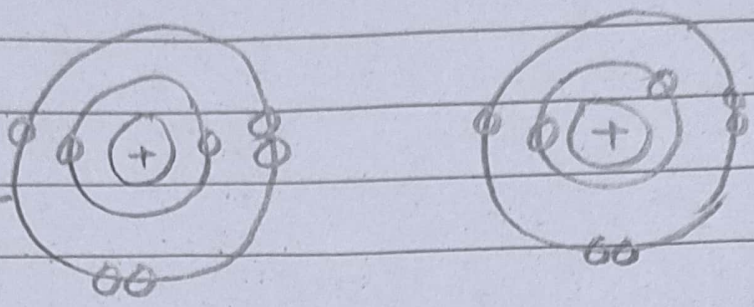
is deficient in three electrons.

Nitrogen Atom ←



Both requires 3 electrons, so they will share 3 valense electrons.

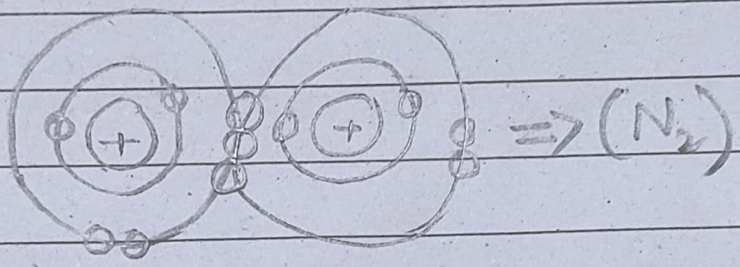


Fig: Triple Covalent Bond.

No 3

a) Answer:

Lunar Eclipse:

When the earth cast its shadow on the moon it is called lunar Eclipse.

Explanation:

When the Earth

comes in between Sun and Moon, the shadow of Earth is cast on the Moon such as obscure the light of the Moon. And this phenomenon is called lunar Eclipse.

Diagram:

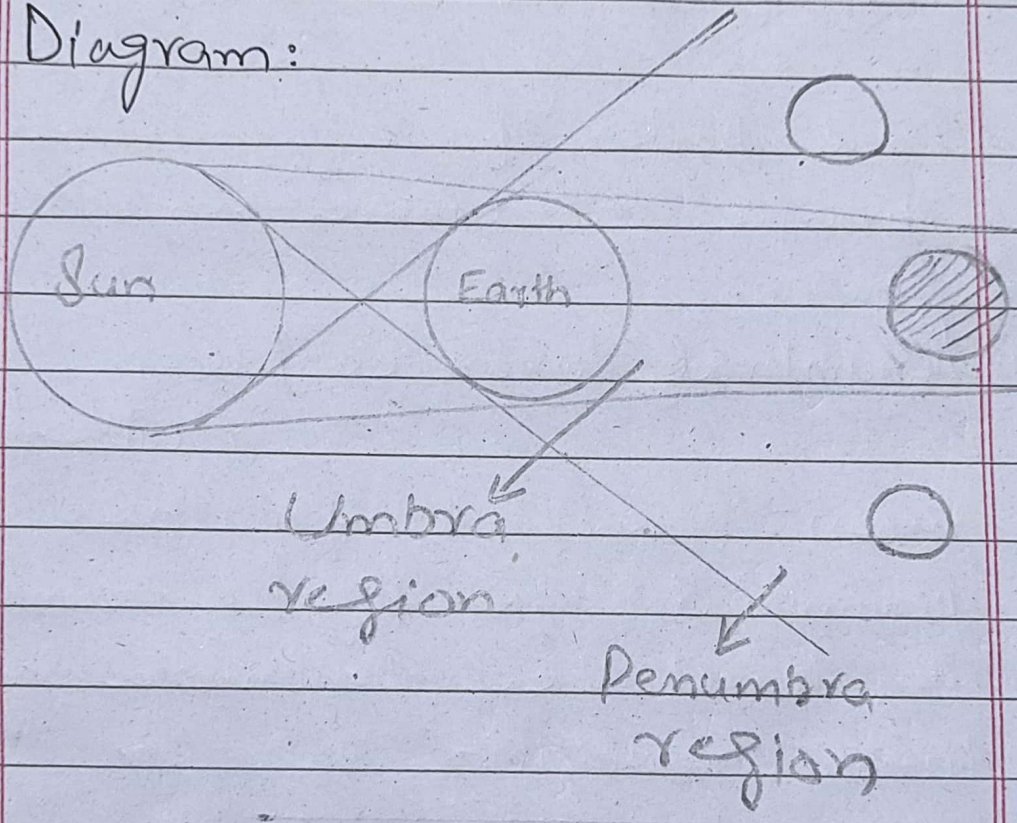


Fig: Lunar Eclipse

Types of lunar Eclipse:

Base on the presence of moon in Umbra or Penumbra region there are following types.

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i) Total lunar eclipse:

When full moon passes through the umbra region it is called total lunar eclipse.

ii) Partial lunar eclipse:

When some parts of moon passes through the umbra region.

iii) Penumbral lunar eclipse:

When moon passes through the penumbral region of the moon it is called penumbral lunar eclipse.

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b) Answer:

Enzymes:

These are biological chemicals which speed up the process of biological reactions. They don't use

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in reaction but expedite the process and came out unused.

Functions of enzymes:

Enzymes	Functions.
Amylase	Breakdown of carbohydrate into glucose
Sucrase	Breakdown of sucrose,
Pepsin	Secretes in stomach and perform breakdown of complex of proteins.
Trypsin	release in pancreatic secretion and perform breakdown of protein in Duodenum
Lipases	There are also secreted in pancreatic juice and perform breakdown of Lipids.

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Hydolyses:	Mainly present in ~~two~~ lysosomes and perform Process of lysis.
peroxidases	They are highly toxic enzymes mainly present in lysosomes and destroyes any foreign antigen.

3) Answer:

Electromagnetic Radiations:

These are those radiations which do not require any medium to travel in. Such that they can travel in Space or Vaccum.

EMR Spectrum:

It is the range of electromagnetic radiation which contain a range of wavelengths and frequencies.

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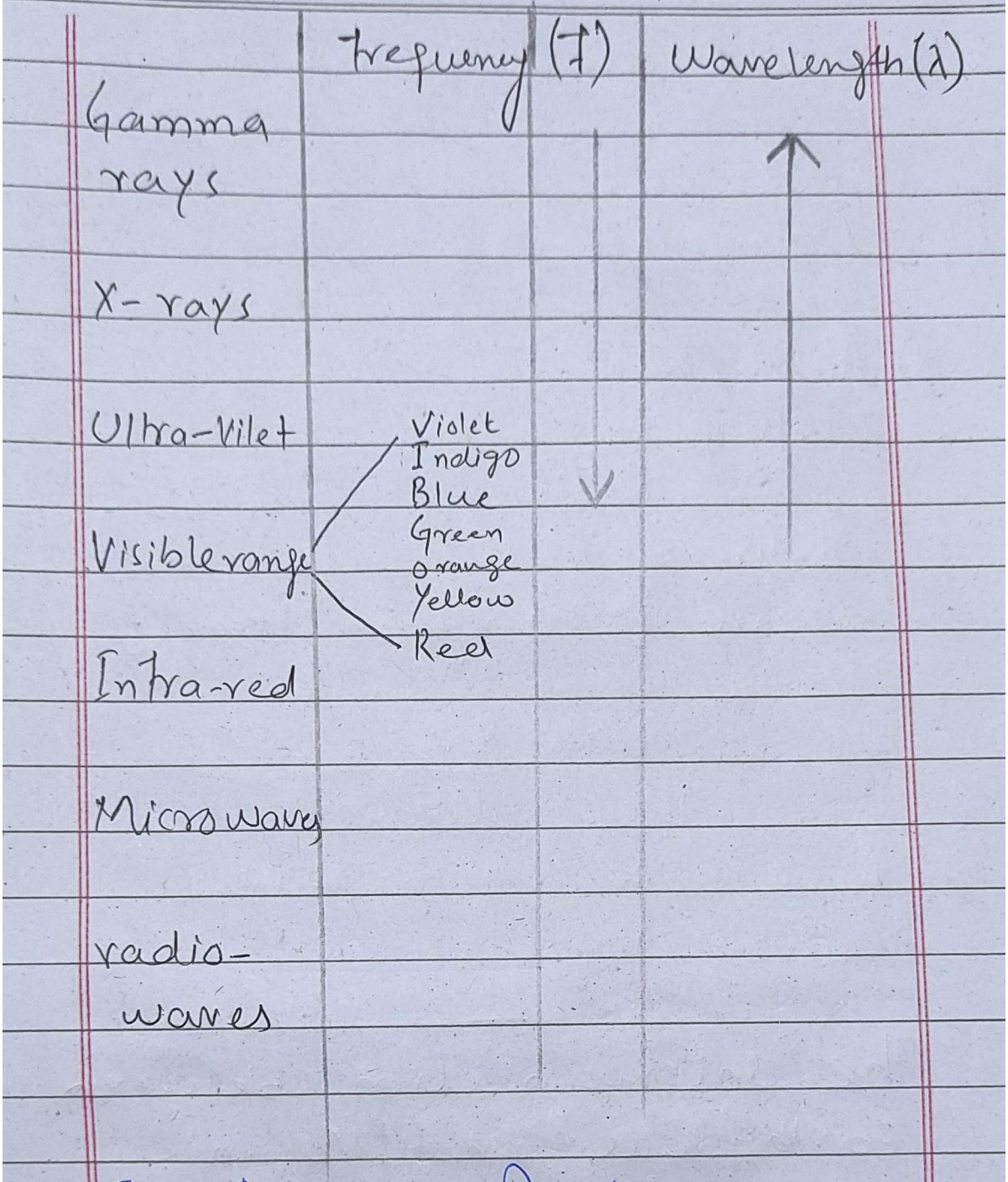

1) The frequency of the waves in EMR spectrum decreases as we move from top (Gamma ray to bottom (radio waves).
2) Similarly, Energy of the waves also decreases down the order.

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3) On the other hand, Wavelength increases down the order and decreases when we go from bottom to the top.

d) Answer:

Earthquake:

The vibration of earth surface due to the release of energy in form of seismic waves.

Volcano:

The movement of lava from earth through a vent is called Volcano.

The interconnection between Earthquake and Volcanic eruptions:

Yes, the earthquake is interconnected with volcanic eruption. Because of the phenomenon behind both of the process is same. And that phenomenon

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is explained by Theory of Tectonic Plates.

Understanding the theory:

According to this theory, Earth consist of huge slates unowns as Tectonic Plates. Due to procen of convection there plates move, when they move they collide at there edges. Due to this collision, a huge amount of energy is generated which is observed in form of earth quake. But, on the other hand, when there plates move slight openings develops at the edge which allows the lava to flow out through there vents creating volcanic eruptions.

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SECTION # II

a) Answer:

Given:

Mean = 15

Numbers = 9, 8, 10, K, 12

Required:

value of K = ?

Solution:

As we known that

$$\text{Mean} = \frac{\text{Sum of all numbers}}{\text{Total numbers}}$$

Put the values

$$15 = \frac{9+8+10+K+12}{5}$$

$$75 = 39 + K$$

$$K = 75 - 39$$

$$\boxed{K = 36}$$

Conclusion:

The value of $\boxed{K = 36}$

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c) Answer:

Given:

radius of football = 12 cm.

Required:

Volume of football = ?

Solution:

As we known that Football is a Sphere

So,

$$V = \frac{4}{3}\pi r^3$$

Put the values

$$V = \frac{4}{3}(3.14)(12)^3$$

$$V = \frac{4}{3}(3.14)(1728)$$

$$r = \frac{4}{3}(5425.9)$$

$$V = \frac{21703.6}{3}$$

$$\boxed{V = 7234.5}$$

The volume of football with radius 12 cm is 7234.5 cm

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2#7

c) Answer:

Given:

2 coin tossed 500 times

Two heads = 105

one head = 275

No head = 120

Required:

Probability of the given events = ?

Solution:

As we known that

$$\text{Probability} = \frac{\text{No of occurance}}{\text{total outcomes}}$$

Total outcome = 4 × 500 times

Total 4 = 2000

$$\text{Probality of two heads} = \frac{105}{2000}$$

$$= \boxed{0.051}$$

$$\text{Probability of one head} = \frac{275}{2000}$$

$$= \boxed{0.1375}$$

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Probability of no head = 120/200

= 0.6

Conclusion:

Probability of

Two heads 10/200 = 0.051

One head 275/200 = 0.1375

No head 120/200 = 0.6

d) Answer:

Given:

Jamie = x

Dad = 4x (Presently)

After 14 years will be 2x of Jamie

Required:

Sum of Jamie's and Dad's age = ?

Solution:

As given in the statement

After 14 years:

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$x + 14 = 2x$

$14 = x$

As we known:

Jamie ages, $x = 14$

Dad's ages, $4x = 4(14)$

$= 56$

the present ages are

Jamie = 14

Dad = 56

Sum of the ages are:

$$\begin{array}{r} 14 \\ +\ 56 \\ \hline 70 \end{array}$$

Conclusion:

So, the sum of the present ages of Dad and Jamies is 70.