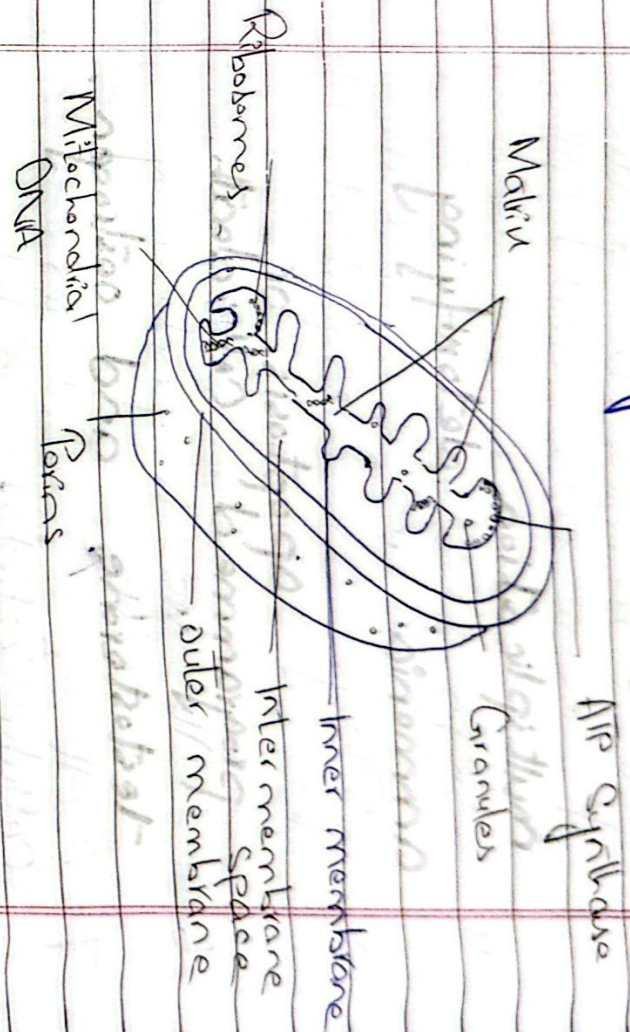


Part II

Section - I

Q No 2 c Discuss structure and function of Mitochondria. How is it - that powerhouse?

Structure of Mitochondria:-



Mitochondria consists of the inner membrane and outer membrane separated by an intermembrane space. Inner membrane is folded to create cristae. Mitochondria have their own small amount of DNA - Have their own Ribosomes.

Function of Mitochondria:-

Mitochondria has many functions such as

- ↓ Electrons

- 1 Mitochondria produce energy through the process of oxidative phosphorylation.
- 2 It regulates the metabolic activity of the cells.
- 3 It promotes the growth of new cells and cell multiplication.
- 4 Helps in detoxifying ammonia in the liver cells.
- 5 Plays an important role in apoptosis or programmed cell death.
- 6 It is a producer of testosterone and oestrogen.
- 7 It is involved in cellular activities, control cell cycle and cell growth.

How is the Mitochondria a power house?

The 'Mitochondria' is the powerhouse of the cell. It is where aerobic cellular respiration and ATP synthesis take place. It is called as the power house of the cell because of its site of producing ATP which is used to perform all of the functions.

of the Cell.
ATP Producer means energy producer.

ATP \leftrightarrow energy \leftrightarrow Power house of the cell
to do all work



Qd What are Covalent bonds?
Explain types along with elaborating structures.

Covalent Bonds:

Covalent Bond is a bond formed by sharing of electrons between two atoms. This bonding is called a **Shared pair or bonding pair** - Covalent Bond is also referred as **molecular bonds**.

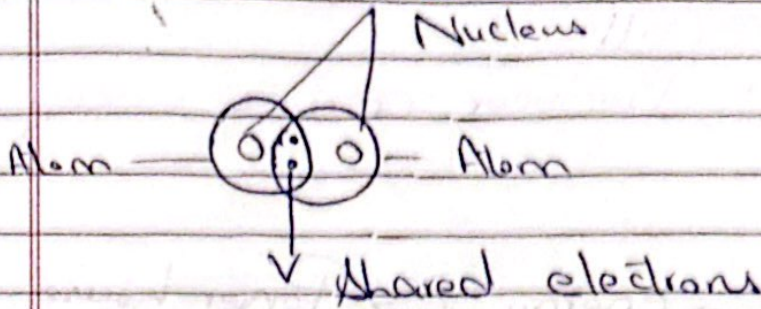
Why atoms bond together:-

The purpose of Covalent bonding is to assure stability of atoms. Sharing of valence electrons occur to stabilize atoms. They themselves share electrons to achieve the state of stability.

Formation of Covalent Bond:-

Date: _____

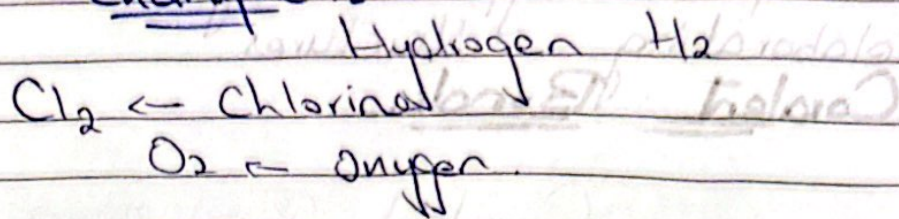
Day: _____



Sharing of Electrons between Same Kind of Atoms:

Sharing of electrons can occur between the same type of atoms.

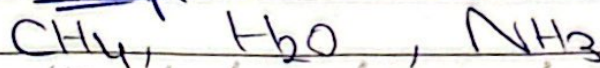
Example:-



Sharing between different kinds of Atoms:

Sharing of electrons between different kinds of atoms can also occur.

Example:-



Methane Water Ammonia

Explain - types along with elaborating structures

Depending upon the number of shared electron pairs, the Covalent Bond can be classified into

Single Covalent Bond
 Double Covalent Bond
 Triple Covalent Bond

→ Single Covalent Bond:

A Single Bond is formed when only one pair of electrons is shared between the two participating atoms. It is sharing of one pair of electron.

Representation:-

It is represented by one dash (-).

Density:-

It has small density than double and triple bond.

Stability:-

It is the most stable.

Example

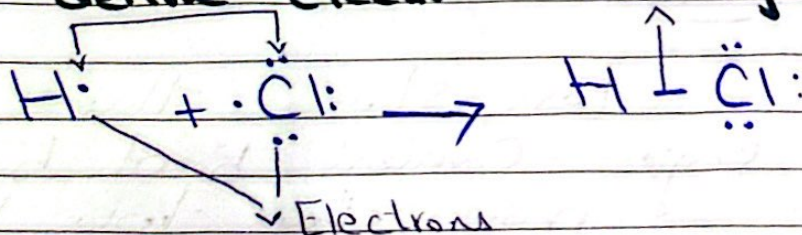
HCl

Shared one electron pair

Structure:-

Lewis symbols used to denote electrons

Represent sharing of electron



Explanation:-

HCl molecule has one hydrogen atom with one valence electron and one chlorine atom with seven valence electrons.

Result:-

Single Bond is formed between hydrogen and chlorine,
 $\text{H} - \text{Cl}:$

⇒ Double Bond:-

A double bond is formed when two pairs of electrons are shared between the two participating atoms.

Representation:-

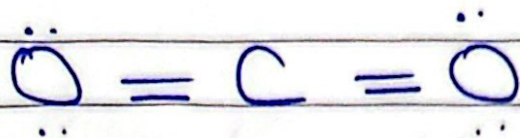
It is represented by two dashes (=)

Stability:-

Much stronger than single bonds but less than triple bond.

Stable:-

less stable than single covalent bond but more than triple bond.

Example :-Carbon dioxide CO_2 Structure :-

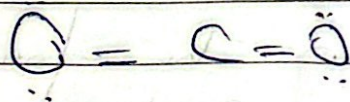
CO_2 molecule with double
Covalent Bond

Explanation:-

To make itself stable
or to complete the octet,
Carbon shares -two of its valence
electrons with one oxygen
atom. Each atom ^{of oxygen} share its
-two electrons with Carbon,
and therefore there are
-two double bonds in CO_2 .

Result:-

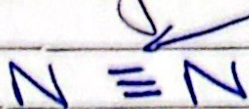
Double bond is formed.

* Triple Bond:-

Triple Bond is formed
When -three pairs of
electrons are shared between
-the -two participating atoms

Representation:

Triple bonds are represented by three dashes

Density:

More dense.

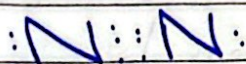
Stability:

It is the less stable type.

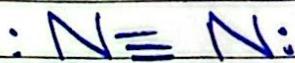
Example:

Formation of a nitrogen molecule.

Nitrogen molecule.

Structure:

or

Explanation:

In the formation of a nitrogen molecule, each nitrogen atom having five valence electrons provides three electrons to form three electron pairs for sharing.

Result:

Nitrogen molecule with
triple bond formed.

←

103 a)

What is lunar eclipse? Explain in detail with apt diagram.

Lunar Eclipse:

An astronomical phenomenon when the moon passes through the shadow of the earth which can only occur during a full moon. It is known as lunar eclipse.

Colour of the lunar Eclipse:

The colour of the lunar eclipse is reddish:-

Reason behind Reddish Colour:

Reddish colour is because of the sunlight bending through the atmosphere.

Condition for the lunar Eclipse:

Lunar eclipse can happen only when the

night is the full moon.
Full Moon:

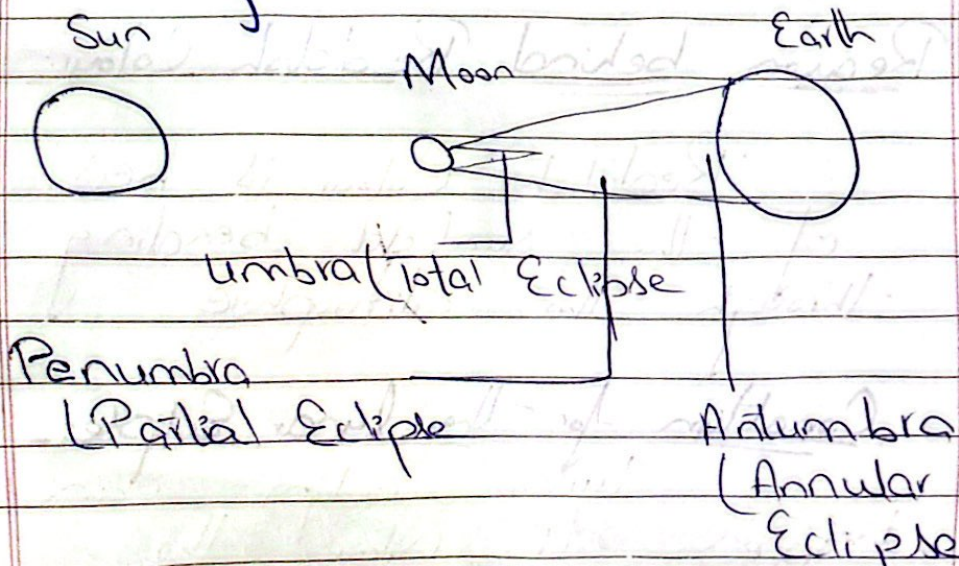
Lunar eclipses can happen only when the Moon is opposite the Sun in the sky, monthly occurrence known as the full moon.

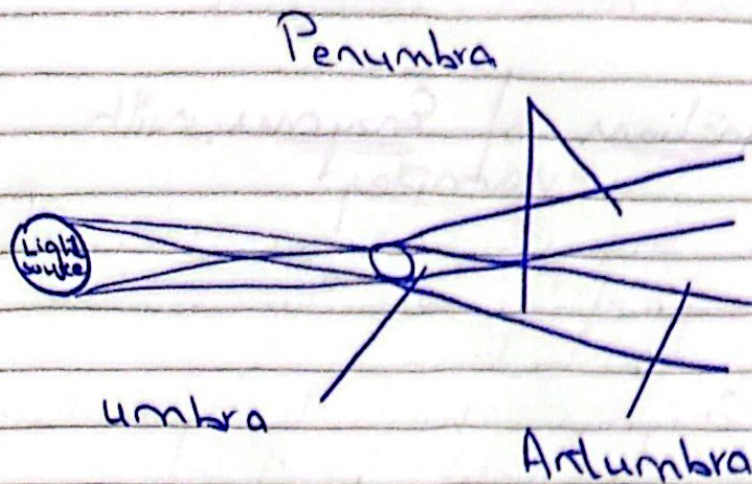
Lunar Eclipse not possible every month:

Lunar Eclipses don't occur every month with full moon because the Moon's orbit is tilted five degrees from the Earth's orbit around the Sun, so most of the time the Moon passes above or below the shadow.

Detail with help of example and diagram.

Diagram.





Types of Lunar Eclipses:

Total lunar Eclipse:-
A total lunar eclipse occurs when the moon and sun are on the exact opposite side of the earth.

Partial lunar Eclipse:-
A partial lunar eclipse is that it happens when only a part of the moon enters the earth's shadow.



Q6) Explain in functions of enzymes in details with examples.

Enzymes:-

"Enzymes can be defined as biological polymers that catalyze

biochemical reactions.

Function of Enzymes: with examples.

The enzyme perform a number of functions in our bodies. These include :-

1 Enzymes help to speed up the chemical reactions.

2 Enzymes help in the signal transduction.

Example of signal-transduction:-

Protein Kinase - that catalyzes the phosphorylation of proteins -

3 Break down Process:

Enzymes break down large molecules into smaller substances that can be easily absorbed by the body.

example:

Pepsin is a stomach enzyme serves to digest proteins.

4 Energy generators:

Enzymes help in generating energy in the body.

Example:

ATP Synthase is the enzyme involved in the synthesis of energy.

5 Help in the movement of ions.

Enzymes are responsible for the movement of ions across the plasma membrane.

Example:

Catic lipase help in lipid movement.

6 Help in Biochemical reactions.

Enzymes perform a number of biochemical reactions, including oxidation, reduction, hydrolysis, etc. to eliminate the non-nutritive substances from the body.

Examples:

Some main categories of enzymes used in biochemical reactions.

Oxidoreductases

Transferases

Hydrolases

Lyases

Isomerases

Ligases.

Each carry out the biochemical reactions.

7 Act as Internal structure Regulator:

Enzymes function - to reorganize
 - the internal structure of
 - the cell to regulate
 cellular activities.

Examples:

Zymogen act as
 a regulator.



Q No 4 a) What is noise pollution?
 Give its harmful affects
 and ways to curb.

Noise Pollution:

Noise pollution is
 - the unpleasant and undesirable
 irritating sound which leads
 - to discomfort in human
 beings.

Intensity of Sound:

Intensity of sound is
 measured in decibels (dB)

- faintest sound
 that human
 can hear — 1 DB

Harmful effects of Noise Pollution:

Harmful effects of noise pollution are as follows:

Hypertension

Hypertension is a result of noise pollution, which is caused due to elevated blood levels for a longer duration.

Hearing loss:

One can have the issues of hearing due to noise pollution.

Sleeping disorders:

Lack of sleep might result in fatigue and low energy level throughout the day affecting everyday activities.

Cardiovascular issues:

Noise pollution causes heart related problems such as the blood pressure level, stress. It is the result of the noise pollution.

Way to Curb Noise Pollution:

Noise pollution can be curb through the following -

Bar Honking in Public Places:

like institutes, hospitals, parks

Install Soundproof Systems:

Install systems especially in hospitals and industries.

Bar Musical Instrument.

Control to desirable limit.

Aforestation

forests or Dense tree cover can be useful.

Avoid Explosives

Strictly banned to be used in forests, mountains and mining areas.



Q No 8

(a)
Brain is a window cleaner

Solution

Given

$$\text{Charge} = ₹ 20 + 4n$$

$$\text{put } n = 7$$

$$\text{Charge} = ₹ 20 + 4(7)$$

$$\begin{aligned} \text{Charge} &= ₹ 20 + 28 \\ &= ₹ 48 \end{aligned}$$

Brain charge ₹ 48 to his customer

(b)

-find out -the correct words -from given .

i) ralciep

replica

ii) tyhniaum

humanity

iii

Search

iv

Annihote

v)

te phra

Verify $(A \cup B)' = A' \cap B'$

Solution: -

$$\text{L.H.S} = (A \cup B)'$$

$$\text{L.H.S} = U - (A \cup B)$$

Putting values we get

$$\text{L.H.S} = \{10, 11, 12, 13, 14, 15, 16, 18\} - (\{10, 11, 12, 13, 15\} \cup \{10, 12, 14\})$$

$$\text{L.H.S} = \{10, 11, 12, 13, 14, 15, 16, 18\} - \{10, 11, 12, 13, 14, 15\}$$

$$\text{L.H.S} = \{16, 18\} \quad \text{--- (1)}$$

Now

$$\text{R.H.S} = A' \cap B'$$

$$\text{R.H.S} = (U - A) \cap (U - B)$$

Putting values we get -

$$\text{R.H.S} = \{10, 11, 12, 13, 14, 15, 16, 18\} - \{10, 11, 12, 13\} \cap \{10, 11, 12, 13, 14, 15, 16, 18\} - \{10, 12, 14\}$$

$$\text{R.H.S} = \{14, 16, 18\} \cap \{11, 13, 15, 16, 18\}$$

$$\text{R.H.S} = \{16, 18\} \quad \text{--- (2)}$$

Hence from (1) & (2)

L.H.S = R.H.S
verified.

find ^(Q) the number of triangle.

$$\begin{aligned} \text{Total no of triangle} \\ &= 8 + 10 + 6 \\ &= 24 \text{ Ans.} \end{aligned}$$

Q No 6
Determine the value of K,
if the arithmetic ...
solution.

To find K = ?

Calculation

We know that
Arithmetic mean = $\frac{\text{Sum of all observations}}{\text{no of observations}}$
putting values we get.

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

Multiplying 5 on both sides

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

$$75 = 9 + 8 + 10 + K + 12$$

$$K = 75 - 39$$

$$\boxed{K = 36}$$

(d)

Given a series $-10, -8, +6, 40,$
 $102?$

Solution

$$-10 + 2 = -8$$

$$-8 + 14 = 6$$

$$6 + 34 = 40$$

$$40 + 62 = 102$$

$$102 + 92 = 200$$

Question mark is 200