SEC-I

QNO.3

a. Why cells form organelles? Discuss mitochondrial in human cell.

Cell is the unit structure of all living things. To compartmentalize its work, produce energy efficiently cell form **Organelles**. These are small structures within cell performing different functions efficiently without any interference. Common organelles include Endoplasmic reticulum Ribosome, Golgi apparatus and mitchondria

For instance MITOCHONDRIA performs following functions.

- Mitochondria are present in Eukaryotic cells
- Involved in manufacturing and supply of energy to cell.
- Thus called Powerhouse of cell.

- Structure of Mitochondria

They are vesicle rod or filament shaped. Mitochondria are bounded by two membranes. The outer membrane is smoother than inner membrane Inner membrane has foldings called **Cristae**. The inner surface of cristae

Contains Small knob like structures called, F_1 particles. These particles are suspended inside the matrix.

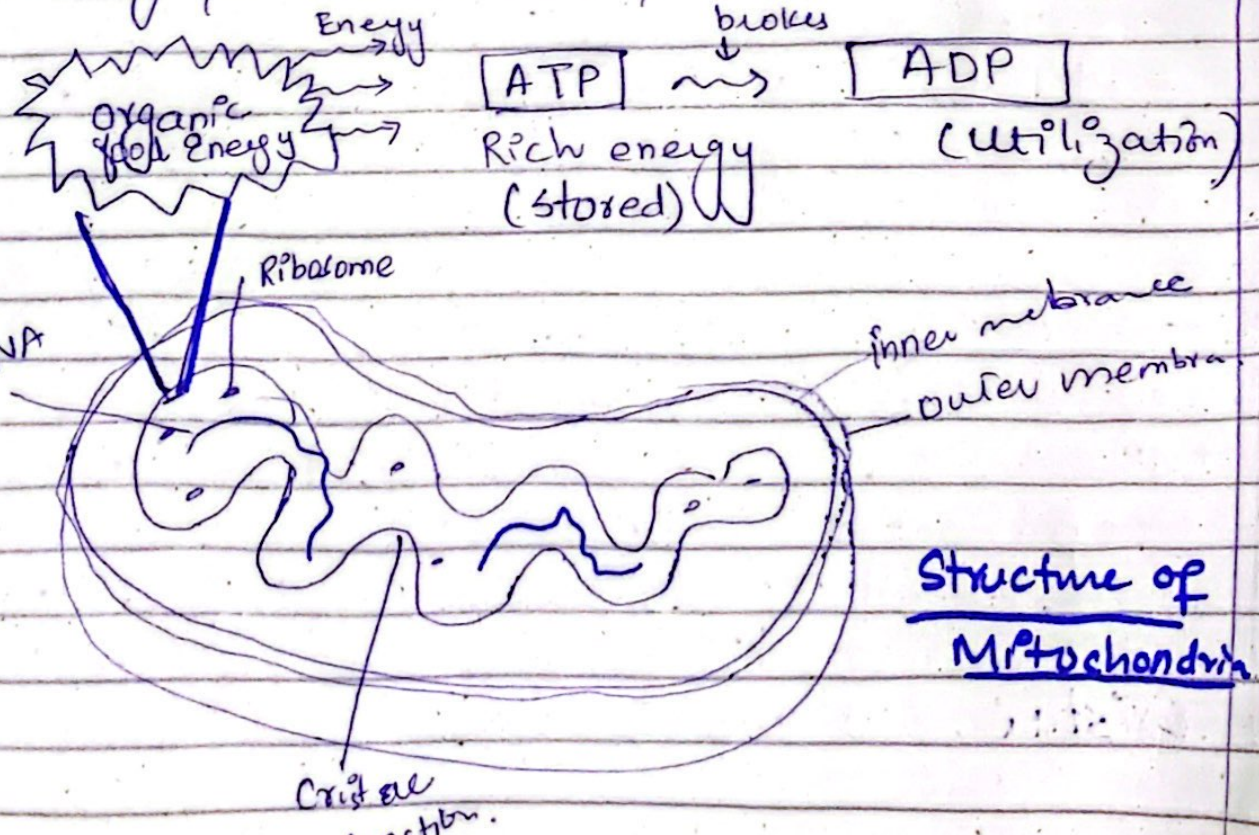
- Chemical Composition of Mitochondria

Mitochondria has membranes composed of lipids and proteins. Its matrix contains large number of enzymes, coenzymes, inorganic and organic salts.

- Function of Mitochondria

Many metabolic processes take place inside mitochondria since its powerhouse of cell.

Following pattern takes place.



Structure of Mitochondria

Qb. What is doping? types of Semiconductors

Doping.

Semiconductors have limited capacity for conduction. To enhance this conduction, small amount of impurities are added called "**dopants**" This process is called "Doping"

Basing on this process of doping there are two types of semiconductors.

1. Intrinsic Semiconductor

These are pure semiconductors (like Silicon crystal), they have no doping or impurities. Thus their conductivity is low and highly dependent on temperature

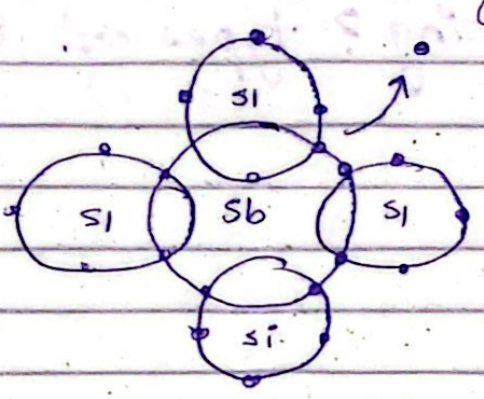
2. Extrinsic Semiconductors.

A Semiconductor that is doped with impurities to enhance its conductivity is known as extrinsic semiconductors.

There are further two types of Extrinsic Semiconductors.

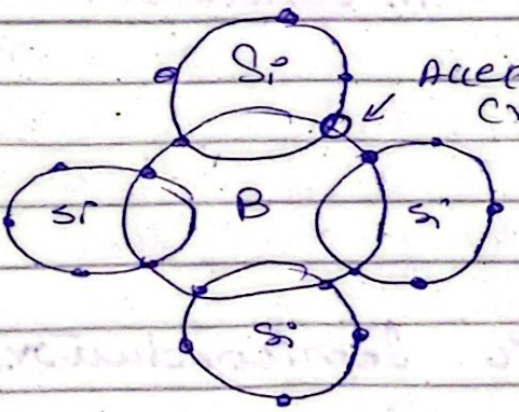
(a) N-type are doped with impurities (Phosphorous) having extra valence carrying excess of negative charged electrons.

Donor impurity
Contributes to free electron



n- type
Sb - Antimony
Si - silicon

b) P- type Doped with acceptor impurities having fewer valence electrons (such as Boron). It has positively charged "holes" where electrons are missing.



Acceptors impurity creates hole.

P type
Si = Silicon
B = Boron

Q(C) Merits and demerits of volcanic eruption?

Volcanic Eruption

volcanic eruption occurs when inside of magma becomes hot and rises to surface. It causes bubble gas to appear eventually it explodes outside surface

of earth.

Merits of volcanic eruption

(a) Fertile Soil

Since inside of earth burts out on the surface its rich in nutrients ~~and minerals~~ making soil fertile. for agriculture.

(b) Mineral source

volcanoes bring essential mineral and metals, such as Gold and copper.

(C) Different types of Rocks

In result of eruption, layers of magma forms on surface of earth creating beautiful landscapes.

(d) Tourism

Beautiful landscapes forming in result of volcanic eruptions can attract alot of tourism.

Demerits of volcanic Eruption

(a) Loss of life and Land.

Eruptions ~~can~~ destroys home and causes death of animals and humans.

b) Health Risk

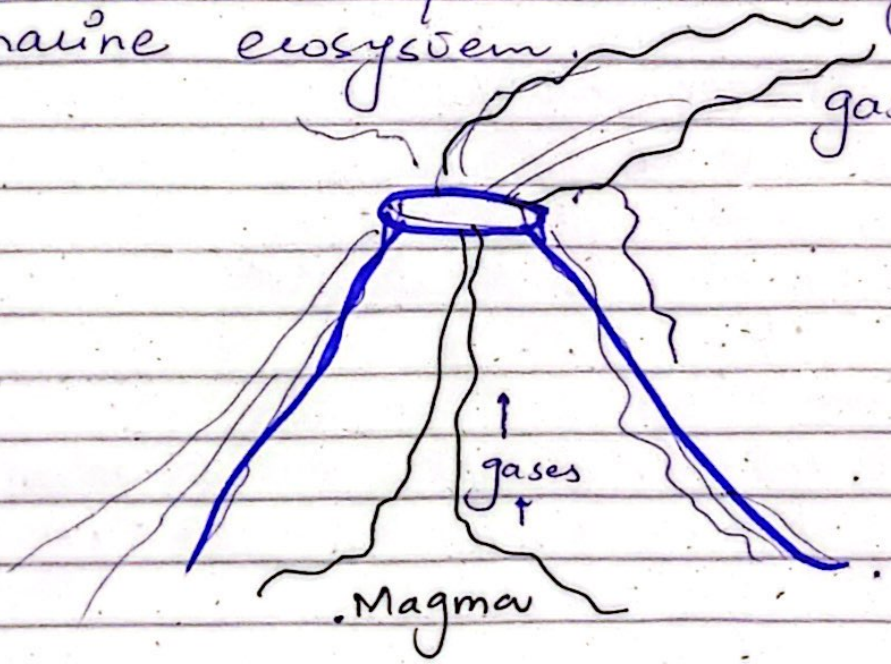
Eruption of gases and other material causes respiratory health risks.

c) Other Disasters

Eruption triggers disasters such as earthquakes and tsunamis.

d) Loss of Biodiversity and marine life

Eruption on earth damages plants and vegetation and eruptions in sea or ocean pertains damage to marine ecosystem.



Volcanic Activity

Q d: what is Dengue? ... remedies?

→ Dengue

Dengue is mosquito-born viral disease. It causes severe headache, body pain, muscle and joint pain.

(a) Causative agents

The Dengue-virus, using mosquito as its carrier, causes dengue in humans. It has four distinct but related types (DENV-1, DENV-2, DENV-3, DENV-4.

When carrier mosquito bite, it transfer the virus.

(b) Symptomalogy

After 4-10 days of bite, Sudden high fever, Severe headaches, body pain muscle pain, joint pain, nausea and sometimes rash like symptoms occur.

(C) Remedies.

Best remedie for any disease is "Prevention"

(i) Prevention using mosquito repellents, wearing protective clothing,

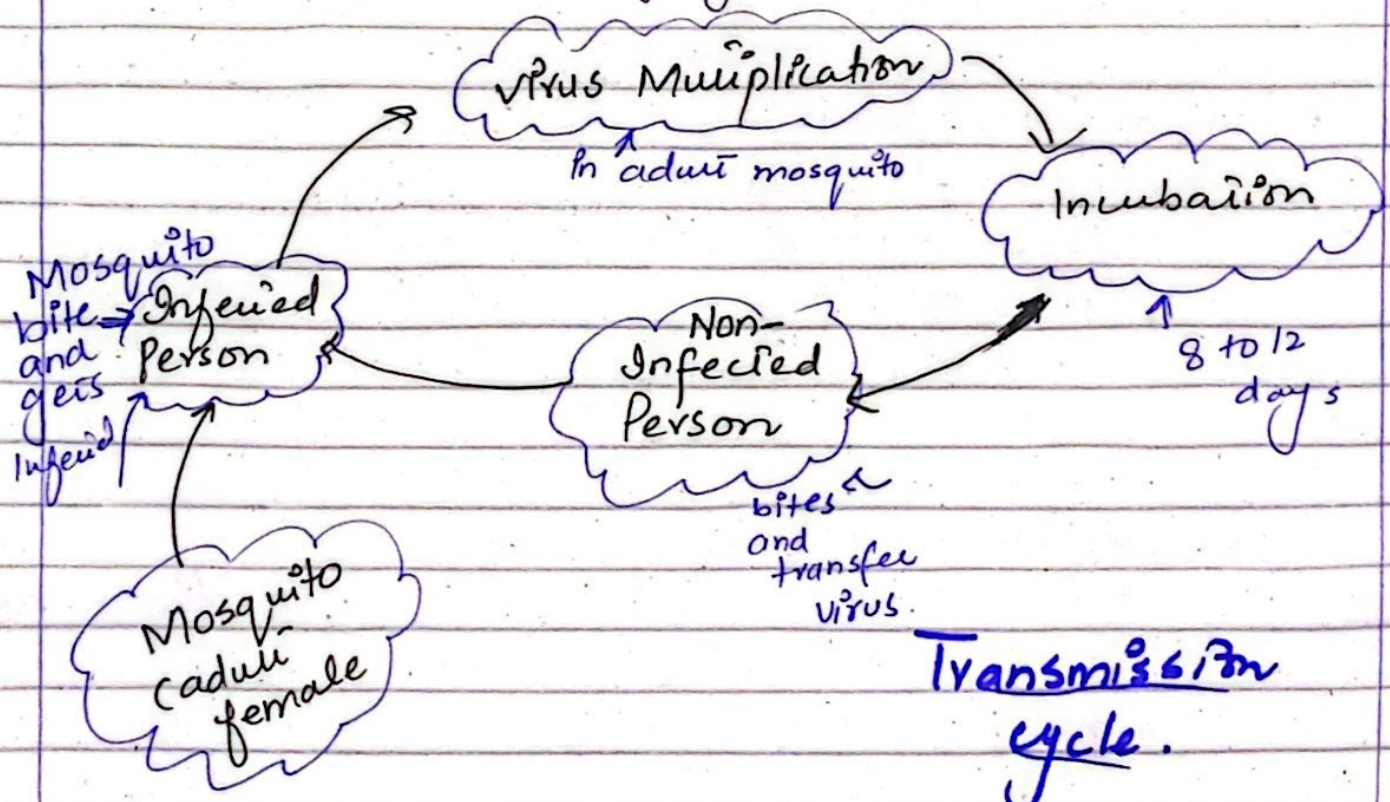
- Take care of water that may become breeding ground, and using nets even while sleeping during mosquito season.

(ii) treatment for mild cases

Plenty of rest, intake of fluids and pain relieve medicines

(iii) For Severe cases

Hospitalization, Iv fluids, and necessary Blood transfusion (carrying plasma)



Transmission cycle.

SECTION - II

Q No. 6

(a) A store has Packets of candies - - - - - - - - - - - - are there?

Ratio of candies in store

Apple, Berry, cherry, Daie → 3 : 6 : 2 : 5

Step 1

Let, x, number of candies for each flavour.

Number of Apple candies = 3x

Number of Berry candies = 6x

Number of Cherry candies = 2x

Number of Daie candies = 5x

Step 2

Apple candies exceeds daie candies by "35"

Equation

$$(3x) - (5x) = -35$$

$$-2x = -35$$

$$x = \frac{-35}{-2} = 17.5$$

Step 3

Number of berry candies = 6x = 6(17-5).

= 105

= 105 Berry candies.

200
2
25/100 200

200$ gets.

(b) A camera Priced at 25% off ----

Camera Price = 200$
Discount = 25%
Tax = 6%

Step 1

Discount amount = 25% = 0.25
Discounted Price = 200 × 0.25
= 50
Paid. Price = 200 - 50
= 150

Step 2

Tax = 6% = 0.06
= 150 x 0.06.
= 9

Step 3

Final Price (after discount and tax)
= 150 + 9
= 159

= 159$ was paid. for Camera.

(c) A bicycle covers 36 km ---

Bicycle covers = 36 km
Speed = 18 km/hr
Time = 1 pm.

Step 1

Time taken for Journey

$$\text{Time} = \frac{\text{Distance}}{\text{Speed}}$$

$$= \frac{36\,\text{km}}{18\,\text{km/hr}} = 2\,\text{hr}$$

Step 2

Starting time = 1 pm
time taken = 2 hr

Bicycle reached = 1 pm + 2hr = 3pm.

= Bicycle reaches at its destination at 3Pm

(d) unscramble the words

(i) statistics

(ii) LEMBARG