

1. Explain dark energy and dark matter.

Dark energy and dark matter both are mysterious substances that help to expand the universe as well as holding the galaxies. They both account 68% and 27% of the universe.

a) Dark energy:

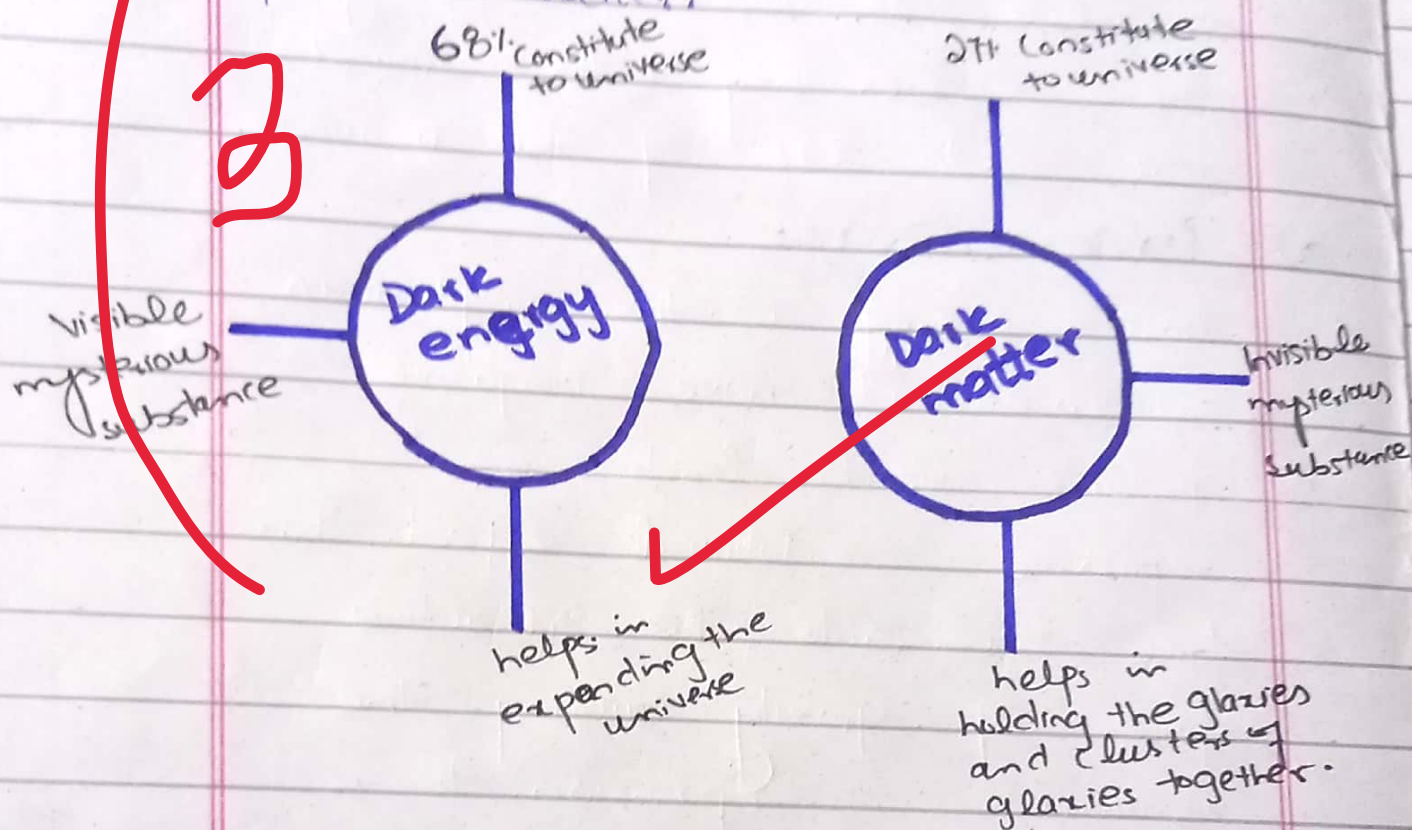
Dark energy is the mysterious substance that have negative pressure which leads to a repulsive gravitational effect. This force counteracts the attractive force of gravity causing the universe's expansion. It is visible through the observation of the distant supernovae. It constitute 68% in the universe.

Explain in a bit more detail

b) Dark matter:

Dark matter is invisible, mysterious substance. It constitute 27% of the the universe. It has strong gravitational pull that helps

to hold the galaxies and clusters of galaxies together. Observations of the cosmic microwave background provide strong evidence for the existence of dark matter.



2. What is dengue? Give a brief account of its causative agents and its symptoms?

Dengue is a viral infection, which is transmitted by female mosquito called Aedes. By the bite of Aedes mosquito this virus transmit from the mosquito to the person.

a) Causative agents:

The causative agent of Dengue is only a mosquito. A female mosquito called *Aedes* belong from the *aegypti* species.

b) Symptoms

Flue like condition in some cases but it leads to life threatening condition called dengue haemorrhagic fever.

c) Prevention of Dengue:

- a) Eliminate mosquito breeding sites.
 - b) Cover water storage containers.
 - c) wear protective clothing
 - d) use of mosquito repellent
 - e) install window and door
 - f) Regular cleaning of surroundings
 - g) Public education campaign.
 - h) Early diagnosis and treatment.
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3. Discuss structure and function of mitochondria. How is it the power house.

Mitochondria is a organelles present inside the cells that helps to provide the energy. It is also called power house of the cell because it synthesized the ATP.

a) structure of the mitochondria.

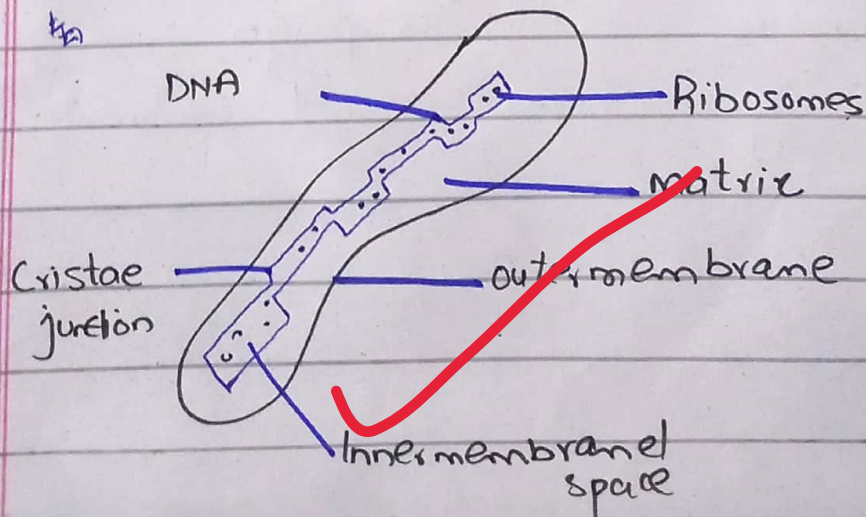
Mitochondria has two membranes inner membrane and outer membrane.

Inner membrane:

Helps to form finger like folding called Cristae

Inside the mitochondria liquid is present called matrix

It has own DNA that's why called self replicating bodies.



b) Function of mitochondria:

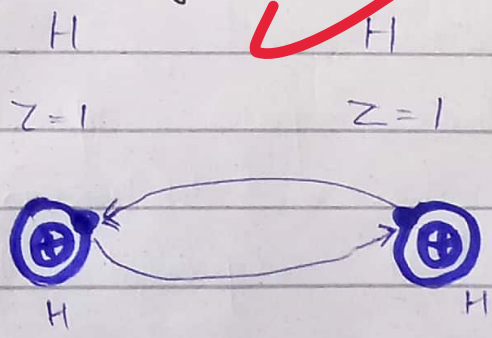
- a) Synthesize ATP
- b) Break down of sugar molecules
- c) which is used to transport energy within the cell.
- d) This energy is used for metabolism.

4. What are covalent bonds, explain types along with laboratory structure.

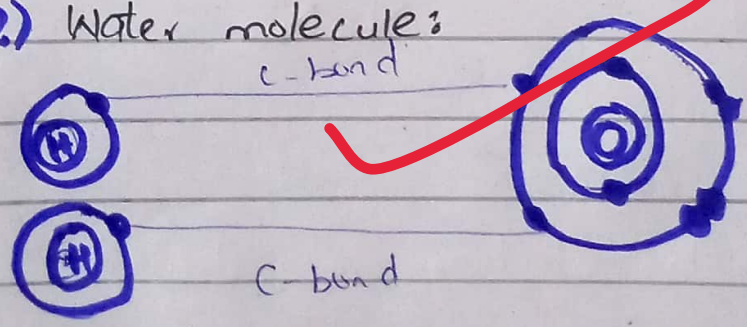
Covalent bond is the sharing of mutual sharing of electrons between the atoms.

a) For examples:

1) Hydrogen (H_2)



2) Water molecule:



b) Types of covalent bonds:

1. Single covalent bond:

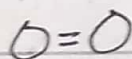
In a single covalent bond, one pair of electrons is shared between the atoms.

It is represented by a single line between two atoms in structure.



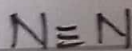
2. Double covalent bond:

A double covalent bond occurs when two pairs of electrons are shared between two atoms.



3. Triple covalent bond:

In which three pairs of electrons are shared between two atoms. It is represented with three lines.

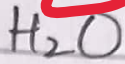


4. Polar covalent bond

In which electrons are shared

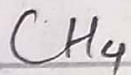
gravitational pull that helps

unequally between atoms due to
~~attract~~ a difference in electroneg-
ativity.



5. Non polar covalent bond

When two atoms share electrons
equally, the bond is non polar.



Carbon and hydrogen share
electrons almost equally, resulting
in non polar covalent bonds.