

## Questions - 2 (a)

### Dengue

Dengue is a virus that is spread by mosquito bites.

### Symptoms

1. High fever
2. Vomiting
3. Rash
4. Aches and pains of bones, muscle joints.

### Causative agent

1. It is caused by RNA virus.
2. It is a member of the viral family "Flaviviridae".
3. Transmitted by aede mosquito.

(b)

### Dark matter

Partially composed of objects that are difficult to detect such as black holes, intergalactic dust, and undiscovered objects.

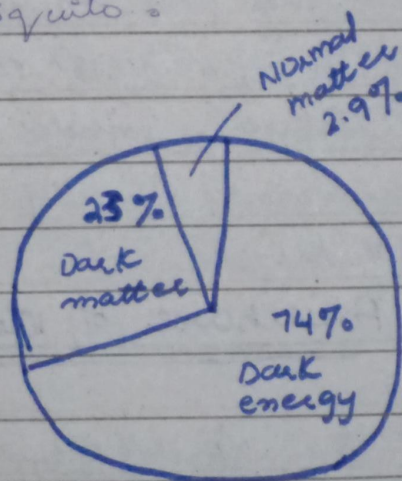


Fig: components of universe

### Dark Energy

It was discovered in the 20<sup>th</sup> century when astronomers determined that the expansion of the universe is accelerating.

It produce a pressure like anti-gravity to cause this acceleration. Physicists believe that it is the single largest component of the world. It possess the negative pressure which means the more space it occupies, the less energy it has. Therefore, it expands space in order to reduce its energy.

(C)

## Mitochondria

It is Double membrane structure with outer smooth membrane and inner membrane with invaginations called

"Cristae". Inside the inner membrane the jelly like juice material called "Matrix".

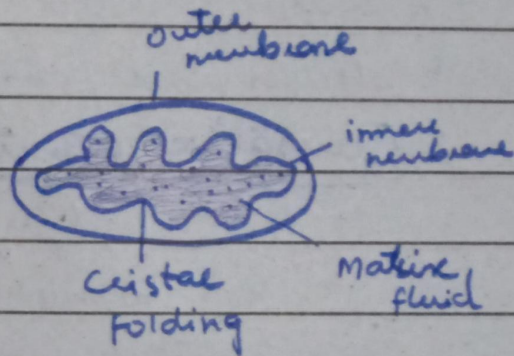


Fig: Mitochondria

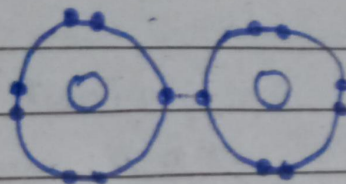
## Powerhouse of the cell

It is the powerhouse of the cell and involved in energy production. Mitochondria converts energy from food into adenosine triphosphate (ATP), a molecule that store energy and fuel other cellular processes.

(d)

Covalent bonds

It is a bond that involves the sharing of electrons to form electron pairs between atoms and these electrons are known as shared pairs. When they share electrons, this process is called covalent bond.

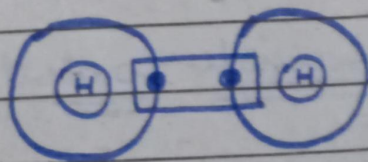


Sharing of Available valence electrons

Fig: Covalent bond

Types of covalent bond1. Single Bond

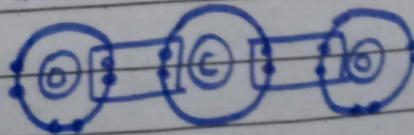
When one or two pair of electrons are shared between the atoms.



$H_2$  (Hydrogen)

2. Double Bond

When two or four pairs of electrons are shared between the atoms.

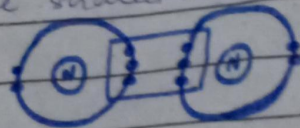


$CO_2$

(Carbon dioxide)

3. Triple Bond

When three or six pairs of electrons are shared between the atoms.

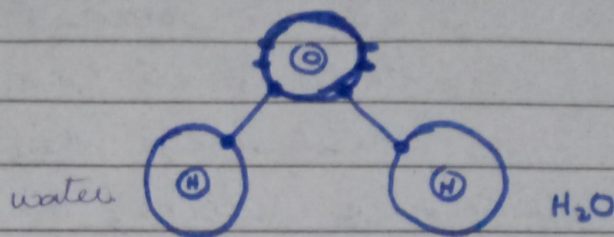


$N_2$

Nitrogen.

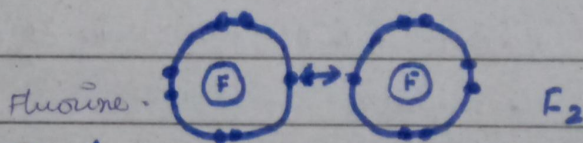
### 1. Polar Covalent Bond

It is based on the polarity and coordination of the atoms. When the atoms sharing the electrons have a significant difference in their electronegativities that is 0.1 to 2. One atom is slightly negative and the other atom becomes slightly positive.



### 2. Nonpolar Bond

When the electronegativity difference between the atoms is zero, the electrons are equally shared between the atoms then it is known as covalent bond nonpolar.



### 3. Coordinate Covalent Bond

The shared pair of electrons comes from one of the atoms. This type of bond is typically observed in the bonding of metal ions to ligands.

