

PART - II

Section-1

Q2

2

Dengue Fever:

Introduction:

Dengue is a mosquito-borne viral disease. This virus is transmitted by female mosquitoes mainly of the species *Aedes aegypti*, and to a less extent by *Ae. albopictus*. Dengue was first was in 1779. Its viral cause and transmission was not known until 1906 and 1907. Severe Dengue also known as Haemorrhagic fever was first discovered in 1950 during dengue epidemic in Thailand and Philippines. Dengue virus affects 500-100 million individuals annually. This disease is epidemic and affects people globally. There are 4 types of viruses that cause dengue (i.e. DEN-1, DEN-2, DEN-3 and DEN-4). Infection with one type gives lifelong immunity to that type, but short immunity to other type.

Symptoms:

Dengue fever has the following symptoms.

- (i) Severe fever
- (ii) Flu like illness
- (iii) Headache
- (iv) Pain behind eye; muscle and joint pains.
- (v) Nausea, vomiting,
- (vi) Swollen glands

→ The symptoms lasts for 2-7 days, after an on.

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Incubation period of 4-10 days

Severe Dengue:

- ↳ lack of Plasma
- ↳ Fluid Accumulation
- ↳ Severe bleeding
- ↳ Respiratory distress

⇒ warning signs begin to appear after 3-7 day of first ~~sign~~ symptoms. It include symptoms of abdominal pain, persist vomiting with blood, bleeding gums, rapid breathing

Transmission:

The primary vector is *Aedes aegypti* mosquito. After an incubation period of 4-10 days; an infected mosquito is capable of transmitting the virus for the rest of its life. Patient with infected dengue virus can transmit the infection (for 4-5 days; maximum 12). *Aedes* mosquitoes when the first symptoms has appeared.

2. Dark matter:

Dark matter is a mystery, because much is not known than known about it. First, dark matter is dark, it is not in the form of stars and planets that we see. observation shows that dark matter constitutes 27% of ~~all matter~~ the universe, while 5% visible matter.

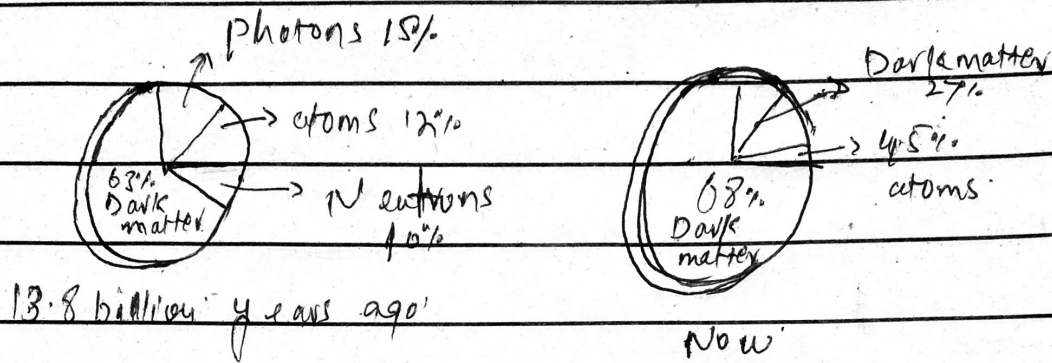
What we know about dark matter:

- (i) They are not in form of dark clouds of normal matter, matter made up of particles called baryons. It is because we would be able to detect baryonic clumps by their absorption of radiation passing through them.
- (ii) Dark matter is not antimatter, because we do not see the ~~the~~ gamma rays production.
- (iii) High concentration of ~~light~~ matter bend light passing near them. But we do not see such phenomena to claim of the presence of dark matter.

Dark Energy:

A theoretical form of energy postulated to act in opposition to gravity and to occupy the entire universe, accounting for most of the energy in it and causing its expansion to accelerate.

More is unknown than is known. However, it
accept the expansion of universe is a
mystery. It turns out that 68% of the
universe is dark energy. Scientists suggest
that universe is expanding due to dark energy.



C. Mitochondria

Mitochondria is very important
organellar. They are present in eukaryotic cell only.
They are involved in manufacturing and supply
of energy to cell. That's why it is called
power house of a cell. The size and number of
mitochondria is different in different cells.

Structure:

Mitochondria may be in the form of rod or filament.
Mitochondria is double membrane bounded. Outer
membrane is smooth while inner membrane.

have many folding, called cristae.

The inner surface of cristae ~~contains~~ ~~the~~ contains
small knob like structure, called F1 particles.

The F1 particles are suspended inside the
matrix

Composition.

The mitochondrial membrane have similar composition to cell membrane. It is composed of lipids and proteins. The mitochondrial matrix contains a large numbers of enzyme, coenzyme, organic and inorganic salts. Mitochondria also contains ~~some~~ DNA and ribosome. So, some proteins are synthesized here.

Formation:

Mitochondria is a self replicating organelle. It means new mitochondria are formed by the division of ~~the~~ the old mitochondria.

Function:

→ Many important metabolic processes occur here, that is, Krebs cycle, aerobic respiration, ~~and~~ fatty acid metabolism etc. Energy is released from organic food during these metabolic processes. This energy is provided stored in the form of ATP. ATP provides energy to cell on demands.

d. Covalent Bond.

A bond which is formed by mutual sharing of electrons. There are 3 types of covalent bonds; a single covalent bond, double covalent, and triple covalent. Some covalent bonds are polar and other coordinate.

Types:

(i) A Single covalent Bond: A bond formed by mutual sharing of one electron. It is denoted by a single dash (-)

Explanation: Those elements of periodic table which have an unpaired electron in its outermost orbitals share their electron with other elements. In this way they pair up their spins.

(ii) Double covalent bond: Bond formed by mutual sharing of two electron pair. It is represented by two small dash (=)

Example: CO_2 , Ethene etc.

(iii) Triple covalent bond: Bond formed by mutual sharing of three electron pairs.

Example: Ethyne, N_2 etc.

Covalent bond can be divided into two types on the basis of polarity.

(1) Polar covalent bond

(ii) Non polar

Q3 (a) Lunar eclipse:

"An astronomical event that occurs when the moon moves into the Earth's shadow, causing the moon to be darkened."

The moon moves in an orbit around the Earth, and at the same time, Earth orbits the sun.

Sometimes ^{Earth} moves between the sun and the moon.

When this happens, Earth blocks the sun light that normally is reflected by the moon. Earth's shadow falls on it. This is an eclipse of the moon - a lunar eclipse. A lunar eclipse can occur only when the moon is full. A lunar can be seen from the Earth at night.

3 Types of lunar eclipse.

(i) Penumbra lunar eclipse.

When the moon passes through the Penumbra of the Earth's shadow, the moon's color slightly changes ~~as their~~ is so, it is rarely visible from earth.

(vi) ~~Partial~~ Partial Lunar eclipse.

When the part of the Moon passes through the umbra of Earth's shadow then it turned as partial lunar eclipse as its whole area is not obscured by the shadow.

(vii) Total Lunar eclipse

When the entire moon passes through the umbral region of the earth's shadow and the moon is totally obscured.