

## PART II SECTION I

### QUESTION (2)

#### A); DENGUE :-

Dengue is a type of fever and it is a mosquito borne disease that is caused by dengue virus.

#### CAUSATIVE AGENT :-

Dengue fever is caused by a special type of mosquito specie called *Aedes aegypti*. There are four strains of virus called

serotypes referred to as DENV-1, DENV-2, DENV-3, and DENV-4.

Dengue is transmitted through the bite of *Aedes* mosquito and it usually bites at dusk and dawn. They usually lay their eggs in a container like structure that contains water.

#### SYMPTOMS :-

Symptoms begin 3 to 14 day after infection, and major symptoms includes high fever, headache, vomiting, muscle and joint pain, skin rash or skin itching. However, in some cases this disease can aggravate and is known as "Dengue Shock Syndrome". Symptoms can even get dangerous with bleeding, dangerously low levels of platelets, low level of blood pressure that can lead to death.

#### PREVENTION :-

It is advised to prevent dengue



fever that is by using mosquito net, by opting for natural shade for dengue, by covering the lids of open containers of water, wearing covered clothes and avoid going out at dusk and dawn.

(B)

## OVERVIEW :-

Scientists believe that a universe is made up of three matters and they explain matter is as a substance that ~~is~~ has mass and occupies space just like earth. These three matters are known as visible matter, dark matter and dark energy.

## VISIBLE MATTER :-

Visible matter is only 5% in the cosmos. It is known as things that absorb, emit, reflect, ~~some~~ light whether it is visible from naked eye of telescope. For example, ultra violet rays and infrared rays are also part of visible matter including earth, other planets, stars, trees, water etc.

## DARK MATTER :-

Dark matter is only 25% in the space and scientist don't know fully about it. Like visible matter, dark matter takes up space and hold mass but doesn't reflect, absorb, or radiate light ~~at least~~ not enough for us to detect yet.



Scientists say that it is made up of unidentified type of particles that rarely interact with normal matter. Dark matter exists in a vast, web like structure that winds through the whole universe. Scientists believe that it isn't composed of known particles otherwise the universe would look so different.

### **DARK ENERGY:-**

Dark energy ~~are~~ consists of 70% in the universe and scientists know very little about it. Earlier, they observed that the universe was expanding very slowly, but now the pace of the expansion of universe has increased and an "energy" like dark energy is responsible for that. It is responsible for repulsive gravitational effect - pushes the universe away instead of pulling it together.

(C)

### **MITOCHONDRIA:-**

Mitochondria are double membrane-bound cell organelles with a typical size 0.5-1 micrometer in length.

### **STRUCTURE:-**

It has a double membrane structure, with an inner membrane and outer membrane separated by intermembrane space.

i) Inner-membrane:- Forms many



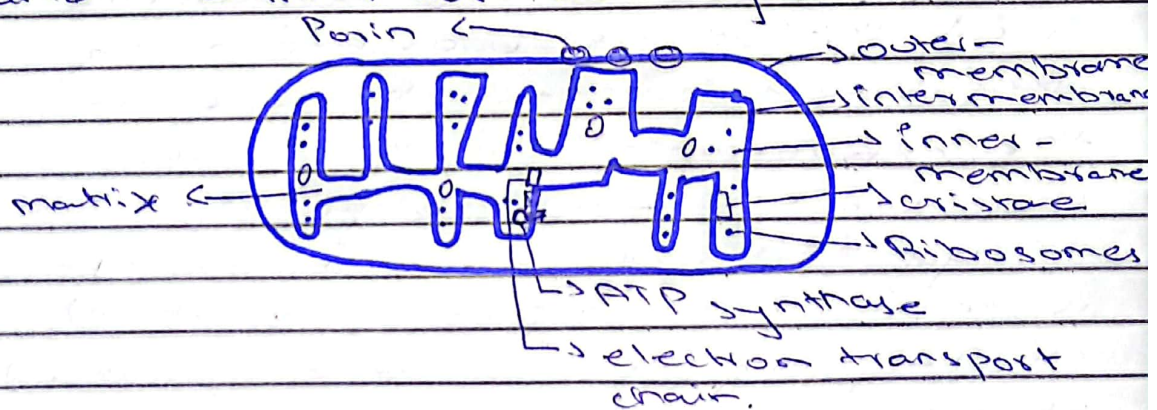
Folds called cristae that extend into the matrix. The inner membrane has a higher protein to lipid ratio than the outer membrane.

ii) Outer membrane:- More similar in lipid composition to eukaryotic cell membranes.

iii) Matrix:- Interior of mitochondria.

iv) Intermembrane space:- A narrow space between inner and outer membrane.

v) Cristae Junctions:- Narrow tubular structures that connect the cristae and the inner boundary membrane.



## FUNCTION:-

Main function of mitochondria is cellular respiration, that is breaking down food and releasing energy in the form adenosine triphosphate (ATP). ATP is essential in maintaining cellular homeostasis and metabolism.

It produces energy for cell survival.

## POWER HOUSE FOR CELL:-

Mitochondria is power house of cell because they help in extracting energy from food.



via cellular respiration. Energy is released in form of ATP that is energy currency.

## (D) COVALENT BOND:-

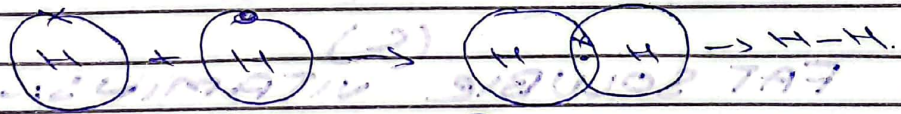
When two atoms combine, they share one or more pairs of electrons with each other and this is called covalent bonding.

### TYPES:-

There are different types of covalent bond based on the number of electrons with each other.

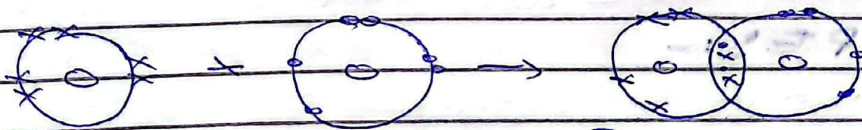
#### i) Singular Covalent Bond:-

When two atoms share only one electron. For example H-H, Hydrogen gas forms simplest covalent bond. Each atom shares their one electron.



#### ii) Double Covalent Bond:-

When two atoms share their two pairs of electrons respectively then it is double covalent bond. Take example of two oxygen atoms, O=O.

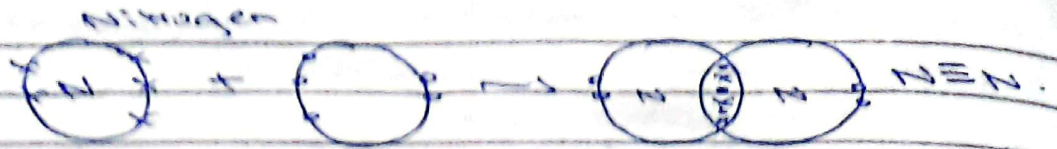


#### iii) Triple Covalent Bond:-

Atoms bond by sharing three pairs electrons is known as triple covalent bond.

Oct 1917:- Bolshevik Revolution - Lenin's party seized power, leading to Russian war.





## QUESTION 5:- (B)

### DRM:-

DRM stands for Disaster Risk Management. It includes prevention, mitigation, preparedness before the disaster. It also reduces disaster losses.

### Situation in Pakistan:-

National Disaster Management Authority is the lead agency at the Federal level to deal with disaster. However, the potential of disaster in Pakistan is so high that this authority is short of funds and not very well equipped with new technologies to detect.

## FAT SOLUBLE VITAMINS:-

Fat soluble vitamins are group of vitamins that dissolve in fats and oils rather than water. They are absorbed along with dietary fats in the intestines and are stored in body's fatty tissue and liver.

### TYPES:-

- i) Vitamin A:- essential for vision and immune system, also found in animal liver and dairy products, also through plant sources e.g. carrot.
- ii) Vitamin D:- essential for bone



- Healthy and Good in sunlight.
- (ii) Vitamin E :- acts as an antioxidant protecting cells from damage.
- (iii) Vitamin K :- essential for blood clotting.

(D)  
**Internet Standards :-**

Internet standard is a set of rules that the devices have to follow when they connect in a network.

**SECTION (B) :-**

**Question 1 :-**

A) :- Brian charges =  $\$20 + 4n$ .  
 $n$  = number of windows.

A house has 7 windows, now the charges = ?

Formula :-  $20 + 4n$   
 $= 20 + 4(7)$   
 $= 20 + 28$   
 $= 48$

(D)

Number of triangles are 10 in the figure.

(B)

**Question 2 :-**

B) :- P and Q average salary = 5050  
 Q and R salary = 6250.

P and R average income = 5200.

monthly salary of P = ?

$$\frac{5200}{2} = \frac{P+Q}{2} = 5200$$

$$P+Q = 5200 \times 2$$

$$= 10400$$