

## Section-I

### Qno. 2. (a) Dengue

#### Causative Agent :

Dengue is a disease spread via dengue virus via Mosquitoes (*Aedes Aegypti*).

#### Symptoms :

It's symptoms include pain behind the eyes, high temperature, fatigue, nausea, vomiting. In severe conditions it may cause thinning of blood leading to platelet formation or internal bleeding.

#### Prevention :

It's prevention includes using mosquito repellents, bed nets, fresh water should not be allowed to collect anywhere. The mosquito generally bites at dawn or dusk.

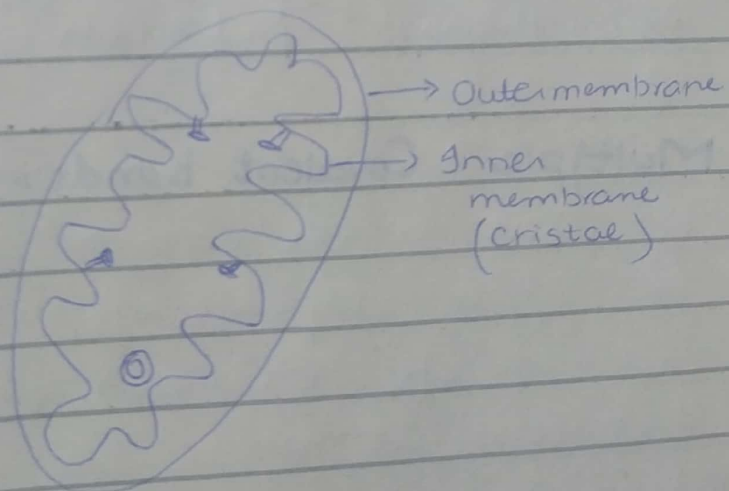
#### Treatment :

It's treatment is generally symptomatic. Paracetamol is given for fever. Patient is encouraged to drink fluid to maintain hydration. Platelet count & Hb is generally monitored via CBC tests.

Qno. 2., C)

## Mitochondria:

Mitochondria is a double layered organelle normally found in eukaryotic organisms. The internal layer is generally folded to form cristae. It is generally present for the formation of ATP i.e. to provide energy to the cell. That's why it's also called powerhouse of the cell. Mitochondria also has its own DNA usually in cyclic form.



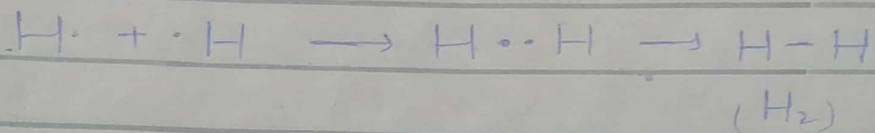
Δ Mitochondria

## Q2, d) Covalent bonds:

Covalent bonds are usually formed between atoms of the same element.

Here the electron pair is shared between the two atoms to form a molecule. No specific positive or negative charge occurs on atoms.

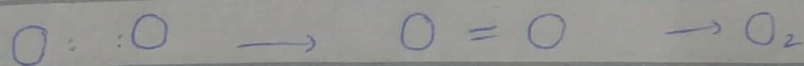
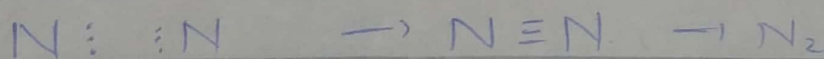
### Single Covalent bond:



Here is the example of hydrogen where a single pair of electrons is shared between atoms.

### Multiple Covalent bonds:

Covalent bonds can be double or triple depending upon the number of electrons shared between atoms.



## Qno. 4. (a) Noise pollution:

Noise pollution occurs when the noise in any area becomes higher than the normal acceptable range.

### Harmful Effects:

It can damage the ear drum & hearing.

Can cause irritability.

May affect the sleep of people.

Can affect the daily life activities of people.

### Causes:

It's generally caused by traffic, living nearby any industrial area or airport - somewhere where heavy machinery is used.

### Ways to curb:

- 1) There should be strict rules about honking in any area particularly residential areas.
- 2) There should be challans / fines for people who cause noise pollution due to cars.
- 3) People should not live nearby airports / industrial areas. The

Planning should be in such a way that these areas are separate

- 4) Industries should use noise reducing equipment in heavy machinery.
- 5) People working in industries should use protective measures e.g. noise cancelling headphones.

Q no. 4. (b)

### Importance of fibers in a diet

Fibers i.e. husk, fruits, vegetable generally improve digestion via absorption of water, absorbing toxic chemicals from the intestines.

They generally reduce constipation.

Thus are an essential part of a normal diet.

### Balanced Diet :

Balanced diet is generally which contains carbohydrates (60-70%), fats (15-30%), proteins (15-20%), dietary fibers and all the important minerals and vitamins.

The important vitamins include  
Vit A, D, E, K (fat soluble vitamins)  
Vit B, C (water soluble vitamins)

While minerals include Sodium,  
Calcium, Magnesium, Phosphorus,  
Chloride etc.

Vitamins and minerals are mostly  
found in fresh fruits and vegetables.

The sources of carbohydrates include  
Wheat, barley, rice.

The sources of proteins are meat,

Fats are found in ~~milk~~<sup>oil</sup>, cheese,  
butter, yogurt.

#### Qno. 4. (c) Drinking water

The Drinking water should normally  
contain no coliform bacteria.

The colour should be clear / transparent

Should be odourless / tasteless

PH should be 7.35 - 7.45

Should contain normal / negligible

Na, K, Mn, P.

Should ideally be boiled to

remove harmful bacteria.

### Qno. (4). (d) Lithosphere

Lithosphere is the area of Earth generally 8-10 km above the ground, 8-10 km below the ground.

It's the area where life generally exists and living beings are found.

Atmosphere, hydrosphere, lithosphere generally occur together to promote life.

Rocks & Minerals are generally formed by heating of lava beneath the surface of earth. The lava cools down to form rock & it's a whole cycle.

## Section-II

Qno. 6. (a) Value of k:

The Arithmetic mean : 15

Unknown value : k

By the formula :

$$\text{Mean} = \frac{\text{Sum of all values}}{\text{Total no. of values}}$$

$$15 = \frac{9+8+10+k+12}{5}$$

$$15 \times 5 = 39 + k$$

$$75 - 39 = k$$

$$k = 36$$

Thus the value of k is 36.

Qno. 6. (c)

The Radius of the football is = r : 0.12m

The Volume can be calculated  
by the formula

$$V = \frac{4}{3} \pi r^3$$

$$= \frac{4}{3} \times 3.14 \times (0.12)^3$$



$$\frac{4}{3} \times 3.14 \times 1.7 \times 10^{-6}$$

$$= 6.8 \times 10^{-6} \text{ m}^3$$

Qno. 6. (d)

The series are as follows

-10, -8, 6, 40, 102, ?

As the difference between -10 & -8 is 2,  
 the difference between -8 & 6 is 14,  
 the difference between 6 & 40 is 34  
 the difference between 40 & 102 is 62  
 So, the difference between 102 & ? is x

As 2 & 14 have difference of 12

14 & 34 have difference of 20

34 & 62 have difference of 28

So, the next difference should be = 36

which should be between 62 & 98

So, the digit in place of '?' is 200.

Qno. 8. (a)

The formula briam is using

$$\text{Change} = £20 + 4(n)$$

If house has 7 windows  $\Rightarrow n = 7$

$$\text{Change} = 20 + 4(7)$$

$$= 20 + 28$$

$$= 48 \text{ £}$$

So, he'll change £48.

Qno. 8. b, Find the correct word

i) ~~tyhniaum~~ ralciep

ii) tyhniaum

iii) arsehcc

iv) moniteah

v) tareph = pharet

Qno. 8. (c) verify

$$(A \cup B)' = A' \cap B'$$

$$A = \{10, 11, 12, 13, 15\}$$

$$B = \{10, 12, 14\}$$

$$U = \{10, 11, 12, 13, 14, 15, 16, 18\}$$

$$\begin{aligned}(A \cup B)' &= U - (A \cup B) \\ &= U - \{10, 12, 13, 15\} \cup \{10, 12, 14\}\end{aligned}$$

$$= \{10, 11, 12, 13, 14, 15, 16, 18\} - \{10, 11, 12, 13, 14, 15\}$$

$$(A \cup B)' = \{16, 18\} \quad - (1)$$

$$A' = U - A$$

$$= \{10, 11, 12, 13, 14, 15, 16, 18\} - \{10, 11, 12, 13, 15\}$$

$$= \{14, 16, 18\}$$

$$B' = U - B$$

$$= \{10, 11, 12, 13, 14, 16, 18\} - \{10, 12, 14\}$$

$$= \{11, 13, 16, 18\}$$

$$A' \cap B' = \{14, 16, 18\} \cap \{11, 13, 16, 18\}$$

$$= \{16, 18\} \quad - (2)$$

As 1 & 2 are equal, hence proved

$$(A \cup B)' = A' \cap B'$$