QUESTION # 1.

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(A) Cell is considered as the 'basic unit of life.' Explain the structure and functions of Cytoplasm, plastids and nucleus.

Answer

→ Cell as the basic unit of life.

Every living organism is made up of cell. Cell is the baisic structural and functional unit of life. structural because the entire structure of living organism is made up of cell and functional is because, the cell is the building block of each and every organ functioning in living organisms. The cell was first time discovered by Robert Hooke in 1665. There are two types of living organisms on the basis of numbers of cells they are composed of. Unicellular organisms are those living organisms which are made up of just a singuler cell while multicellular are those which are made up of more than two cells. The cell is not composed of single entity rather multiple sub cellular organelles function inside of

the cell which is called division of labour among the cell; Metaphorically, this environment of cell is called the cell world.

These are the reasons because of which cell is considered as the basic unit of life. None of the life exists without cell.

→ **Structure and function of cytoplasm.**

* **Structure.**

Cytoplasm is a viscous gel like structure exist inside of the cell. Chemically cytoplasm is made up of waters and some salts. The cytoplasm provides passage/space to the chemical reactions.

* **Function.**

Cytoplasm is the space inside of the cell where other all organelles are floating freely. Beside this cytoplasm provides space to the many cellular chemical reactions inside of the cell. It provides structural support to the cell as well.

→ **Structure and function of nucleous.**

* **Structure.**

Nucleous is a round shaped as well as membrane bounded organelle inside

of the cell. In animal cells it resides at the cented and biggest in size while in the plant cells a bigger vacule in the center displaced it towards the cell membrane. The size of nucleous in plant cell is smaller Comparativly to the animal cell.

* **Function.**

Nucleous is the place where the formation of heritance material / heridetory meterial takes place. Chromosomes exist inside of the nucleous which are responsible for the body formation and sexual orientation of living organism. Beside this nucleous plays important role in the division of labour among organelles. Nucleolus exists in the mid of the nucleous.

→ **Structure and function of plastids.**

* **structure.**

plastids are the membrane bound organelles mainly present in the plant cells. These are responsible for the pigmentation of the plants. It is absent in animals.

* **Functions.**

plastids are fusther divided into three

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components; leucoplast responsible for the pigmentation of chlorophyll, chromoplast for the colour of the flower petals and of chloroplast for the pigmentation of chlorophyll.

D) **What is SWM? Highlight the weaknesses in the SWM of pakistan.**

→ **SWM (Solid waste management)**

SWM stands for solid waste mangemat. In this process the solid waste is collected, recovery and then disposed. There are different strategies which are used in managing solid waste.

i) Separation of solid waste.

In this process of the separation of the solid waste, the waste is separated on the basis of its orientation. The solid waste could be the Industrial waste, Institutional waste, Animal waste, and Agricultural waste, E-waste.

ii) Confirming the Nature of the waste.

In this step it is checked either the waste is recyclable, decomposable or non-decomposable waste.

After confirming those steps the waste is now transferred to the next step.

i) Collection.

In this step the waste is collected. This is done by using light vehicles and then big vehicles apparatus.

ii) Recovery.

In this step the waste is recovered from various parts and then deposit it at the mid of the city for certain time period. Here the material is segregated from eachother on the basis of their composition orientation.

iii) Desposed.

This is the last step of solid waste management where the solid waste is disposed by using different methods.

a) Decomposition.

If the waste is of biological organisms! dung etc, it is decomposed by applying biological organism.

b) Incarcination.

In this process the waste is burnt in high temprature and then briecks are

made out of the ashes.

b) Land filling -

Here the waste is filled under the ground by using scientific methodology. Land is being checked as there must not be water under ground before filling it in.

→ **Weaknesses of SWM of pakistan:**

In pakistan the department of solid waste management is weak and sometimes reluctant to perform its duties because of the series of the reasons.

→ **Uneducated management.**

In pakistan this department is being considered an inferior one, because we are not aware about the positive side of this department. Mostly uneducated people join it so they do not understand the management properly.

→ **Lack of active faculty -**

production of solid waste is a regular activity. thus it demands active faculty to curb the problems. pakistan lack active faculty and faculty is being hired on contract basis so they soon left it.

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→ **Comparatively low wages.**

low wages are being offered to the employees so they do not hesitate to leave it soon.

→ **lack proper logistics.**

This department needs both small as well as big vehicles to carry out the job on time, pakistan lacks it as well.

(4)

→ **Conservative strategies.**

→ **Considering waste a waste.**

(c) **Discuss the causes and preventive measures of Smog.**

Smog is a type of air pollution which forms when air is mix with smoke and fog alongwith other air pollutants, causing serious visibility and health issues.

1. **Causes of Smog.**

i) Emission from vehicles.

Fossil fuel combustion is one of the major reasons of smog. The vehicles usually emit carbon monoxide along with smoke, which is major reason

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of smog production.

ii) Industrial pollution.

Factories and Industries emit CO_2, SO_2, and other matters in the air which produce smog in the air.

iii) Burning of Biomass.

In rural side the agricultural left overs are being burnt after the harvest, that is another big factor behind the production of smog.

(iv) Chlorofluorocarbons emission.

The refrigrators, air conditioners and air coolers usually used for the luxurious life are the CFCs emittors which highly contribute in the production of smog.

2- preventive measures.

Following are the some preventive measures to prevent smog productions.

i) Reducing vehicle emission.

The reduction in the vehicle emission can posit a great reduction in the production of smog.

Vehicle emission can be reduced

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by applying various methods. Switching to the cleaner fuel, By Banning lead fuel in the market.

ii) Industrial Control.

We can overcome the risk of smog by controlling the industries. Government should educate industrial owners to use renewable source of energy to run the industries instead of non-renewable resources.

iii) Reforestration :

Trees and plants are being considered as the carbon sinkers. The trees sink carbon and produce oxygen which is a life gas for all animals on the earth.

iv) Improving waste management.

Open dumping of wastes unmanaged ways adopted for industrial emission leads to the production of the smog. By improving these system we can reduce the waste in the system.

B) Nephron is the basic functional Unit of Kidney - Explain its structure and functions.

Answer

The nephron is the basic functional unit of Kidney. It is responsible for filtering blood, removing waste and maintenance of balance of water, electrolytes and pH of the body. The Kidney consist of more than 1 million nephrons which work simultaneously to keep kidney functional.

1) **Structure of the nephron.**

The ~~Kidney~~ nephron Consist of two parts Renal Corpuscle and Renal tubule. These Components are organized in sequence to carry out various functions of filtration, absorbtion, secration and excretion.

i) Renal Corpuscle.

it consist of Glomerulus and Renal Capsule. The glomerulus is a network of fine capillaries which filter the blood and retain large molecules of proteins, fats and

blood cells while let salts, amino acids and glucose to pass by it.

The Bowman capsule is a cup like structured encircled the glomerulus again filter the product which was once filterd by glomerulus.

ii) Renal tubule.

After passing through the Bowmans capsule. the liquid come into the renal tubule which after absorption, process it into the urine. This segment is divided into three parts.

proximal convoluted tubule, loop of Henle and Distal convoluted tubule. After going through these parts finally urine is formed in collecting duct.

2) Functions of Nephron.

The primary function of Nephron is ~~Abcor~~ Filtration, reabsorption, Secretion and excretion.

i) Filtration.

The process of filtration happens in glomerules. Here the blood cone

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into glomerulus and it filter it and protiens and blood cells are sent into blood and remaing into Bowmans capsule.

ii) Reabsorption.

Reabsorption happens in proximal convoluted tubule and loop of Henle. Here again the salts, amino acids and other nutrients are absorbed and sent into blood.

iii) Secretion.

Refers to the transfers for unused materials like amonia, potessium and hydrogen ions into the renal tubule for excretion.

iv) Excretion.

The mixture of water and salt in collecting duct is again reabsorbed according to the body's need and remaing is sent to the renal pelvis. Here the Urine comes out of the body after storing in bladder for certain time.

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