11.Cell Structure and Micro - Organisms

Q. 1 Fill in the blanks with the proper word.

(i) The organelle called the ..... is present in plant cells only.

Ans : Plastids

(ii) Garbage is converted into.....by micro-organisms.

Ans : Fertilizers

(iii) In the cell, photosynthesis is carried out with the help of ..... .

Ans : Chloroplasts

(iv) An electron microscope is necessary for the study of..... .

Ans : Microbes / Cell organelles

(v) "The cell is the fundamental component of living organisms", this theory was stated by ..... . and .....

Ans : M.J. Schleiden, Theodore Schwann

Q. 2 Answer the following questions.

(a) What is a 'Cell' ?

Ans : The structural and functional unit of the body is called a cell.

(b) Name the different organelles in a cell ?

Ans : Nucleus, Endoplasmic reticulum, Ribosome, Golgi body, Lysosomes, Mitochondria, Plastids, Vacuoles are all different cell organelles.

(c) What are Micro - Organisms ?

Ans : The living organisms on the earth which are in every environment but can be seen only under compound microscope are called micro -organisms .

(d) Which are the different types of Micro - Organisms ?

Ans : Bacteria, Virus, Fungi, Algae and Protozoan are all the different types of Micro - Organisms.

3. What is difference between us ?

(a) Plant cell and animal cell

Plant cell	Animal cell
(1) A plant cell is usually larger in size	(1) An animal cell is comparatively smaller in size
(2)It is enclosed by a rigid cellulose cell wall in addition to plasma membrane.	(2) It is enclosed by a thin flexible plasma membrane only.
(3) It cannot change its shape.	(3) An animal cell can often change its shape.
(4) Nucleus lies on one side in the peripheral cytoplasm.	(4) Nucleus usually lies in the center.
(5) Lysosomes are rare.	(5) Lysosomes are always present in animal cells

(6) Plant cell contains only one large central vacuole .	(6) An animal cell contains small vacuoles.
(7) Plastids are present plant cells contain chloroplast.	(7) Plastids are usually absent.
(8) Plant cell synthesis all amino acids, co-enzymes and vitamins required by them.	(8) Animal cell cannot synthesis all amino acids, co-enzymes and vitamins required by them.

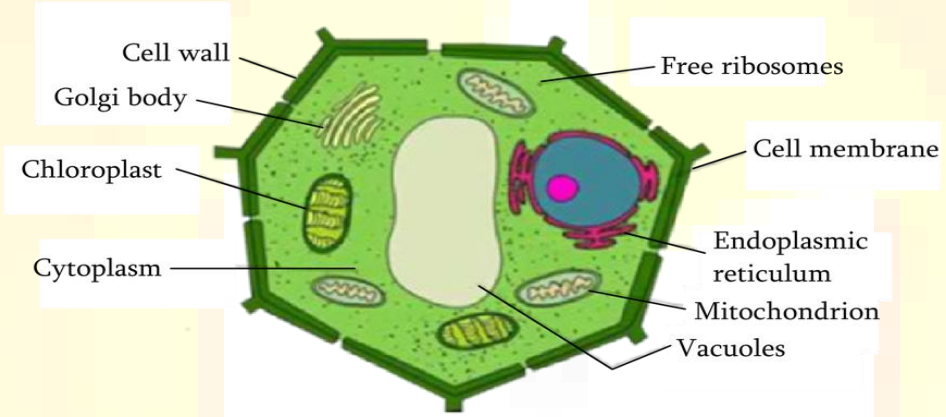
(b) Prokaryotic cell and Eukaryotic cell.

Prokaryotic cell	Eukaryotic cell
1. This is single cell.	1. It is multicellular cell.
2. The size is about 1 to 10 µm.	2. The size is about 5 to 100 µm .
3. Well-defined nucleus is absent	3. Well defined nucleus is present.
4. Mitochondria are absent in prokaryotic cell.	4. Mitochondria are present in eukaryotic cell.
5.In prokaryotic cell lysosomes are absent.	5. In eukaryotic cell lysosomes are present .
6. Chlorophyll is present in the vesicles and not in plastids.	6. Chlorophyll is always inside the chloroplasts.
7. Cell wall is present in the prokaryotic cell.	7. Usually cell wall is absent in eukaryotic cell.
8. e.g. Archaea, Bacteria	8. e.g.Plants and Animals

Q. 4 Answer the following questions with neat and well-labelled diagrams :

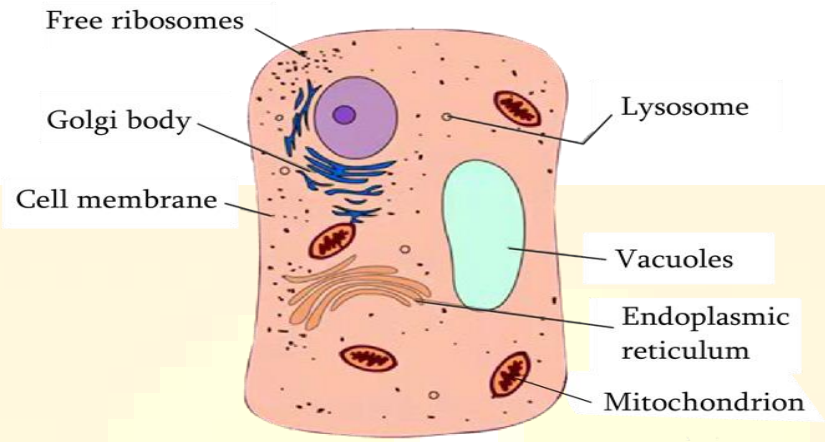
1. Sketch and describe in your own words, the plant cell and animal cell.

i. Plant Cell :



(1) The plant cell have cell wall made up of cellulose. The cell wall is outermost covering of the cell. (2) Inside the cell wall there is a plasma membrane that encloses cytoplasm. Cell organelles are embedded in the cytoplasm. (3) Plastid is an important cell organelle present only in plant cells. Of these chloroplasts perform photosynthesis.(4) Nucleus, endoplasmic reticulum, Golgi body, mitochondria are the cell organelles present in the cytoplasm. (5) Vacuole is usually single and large. Since it is present in the center of the cell, the cytoplasm is pushed to one end.

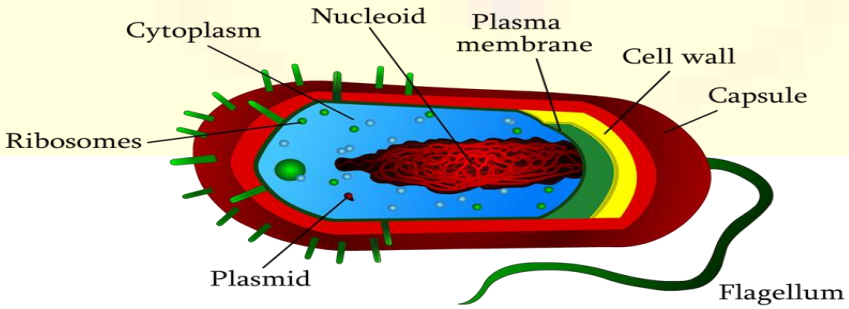
ii. Animal cell :



(1) Plasma membrane is the outermost covering of animal cell. (2) Inside this there is cytoplasm in which the cell organelles are located.(3) The cell organelles are as following : Endoplasmic reticulum, Golgi body, Nucleus, and many smaller vacuoles.

(2) Describe prokaryotic cell with a neat, well labelled and suitable diagram.

Ans :



(1) Micro- Organisms have prokaryotic type of cells. (2) They have prokaryotic structure. (3) They do not have nucleus with nuclear membrane, instead there is nucleoid. (4) Cell organelles enclosed in cell membranes are lacking. (5) Only there are parts like cell membrane, cell wall and nucleoid in the prokaryotic cell.

Q.5. Explain the uses and the harmful effects of micro-organisms.

Ans :

i. Uses of Micro - organisms :

(1) Micro-organisms decompose sewage water and the wastes. (2) Because of decomposition process, they keep the environment clean. (3) Micro- organisms present in the soil and those in the root nodules of leguminous plants convert atmospheric nitrogen into its compounds. These nitrogenous compounds help to increase soil fertility. Thus the protein content of the pulses grown in that soil.(4) Microbes are useful for producing milk products like butter, buttermilk, cheese, etc. (5) The process of fermentation is used for making yoghurt from milk, producing alcohol from grains and fruits, bread from flour as well as in the production of acetic acid, citric acid, lactic acid, vitamins, antibiotics, etc. (6) Microbes are also

used in processes like tanning of skin, production of ropes and strings from agave. (7) Some microbes use to clear an oil slick.(8) Farm waste, human urine and faces, wet garbage, etc. is collected and used in a biogas plant to produce biogas and fertilizer.

ii .Harmful effects of Micro - organisms :

(1) The food is spoiled by micro- organisms. There is fugal attack on food in hot and humid air. (2) Microbes produce toxic material and cause food toxic resulting into food poisoning. (3) Harmful microbes cause diseases in plants, animals and human. Water and food borne microbes cause diseases like amoebiasis, typhoid cholera, hepatitis, gastro.(4) Malaria, dengue, elephantiasis yellow fever, chikungunya, Zika fever, etc. diseases caused by microbes. These diseases are caused through the bite of a female mosquito into human body. Ditherier, common cold, cough, pneumonia, tuberculosis are diseases of respiratory tract which are caused by microbes.

Q.6. Give reasons .

(a) Diseases spread on a large scale during periods of heavy rainfall and floods.

Ans : Mostly diseases spread during heavy rainfall and floods. The food and water gets contaminated. The water logging causes growth of micro-organisms and house flies. They spread the pathogens rapidly. The humid atmosphere induces food

spoilage. Even if food water recedes, the poodle formed helps in the breeding of mosquitoes. All such reasons are responsible for epidemic spread of diseases.

(b) There is a possibility of food poisoning if we eat stale food.

Ans : Microbes are present in the stale food. Some of the microbes produce enterotoxins. Food poisoning is caused by the enterotoxins. Therefore there is a possibility of food poisoning if we eat stale food.

(c) Soil is turned over during tilling.

Ans : Some useful micro-organisms present in the soil. They help to decompose organic compounds into inorganic nutrients. Thereby they increase the soil fertility. Also some microbes help in nitrogen fixation and get nitrogen to the plant. Thus to have better yield of crop and the soil is turned over during tilling to mix the micro-organisms.

(d) Fungus grows quickly in moist or humid conditions.

Ans : The fungus needs a specific environment for growth. The moist and humid conditions are favorable to it. In dry condition fungus does not grow.

(e) A refrigerator is used in almost every home.

Ans :In cold temperature the harmful microbes do not grow. They needs the temperature range between 15^0 C to 35^0 C for growth. In the refrigerator there is very low temperature. So food is stored without spoiling in refrigerator. Therefore a

refrigerator is used to store perishable food item for long time. Thus a refrigerator is used in almost every home.

(f) Bread 'rises' during baking.

Ans : In the bread preparation yeast is used. But yeast is a type of fungus. It undergoes process of fermentation in the dough of bread and releases carbon dioxide. Therefore the bread rises during baking.

(g) Fodder is soaked in water before offering to cattle.

Ans : If water is added into the fodder then it is fermented. by this fermentation the vitamin content rises in the fodder and it also becomes easier for digestion. Thus the cattle is well nourished. Therefore fodder is soaked in water before offering to cattle.

Q.7. When will you use a simple microscope and when, a compound microscope ?

1. Explain in detail how you will use them .

Ans : (1) Simple microscope is of lesser magnification. Parts of flowers or insect parts are observed under this microscope. (2) Compound microscope is used for the observation of microbes. (3) Here magnification is 100 to 450 times. Therefore it is useful for observation of cells and tissues. (4) The simple microscope's stage can be used for direct observation. (5) If the object is studied by compound microscope then it is placed

over glass slide and covered over with cover slip. The object is sectioned into very thin slices and stained appropriately. (6) The mirror is adjusted for optimum light. Then eyepiece and objective lens are brought in one line. (7) The magnified view of the object is seen through the eyepiece. (8) First coarse focus knob is adjusted and then with fine focus knob the accurate focusing is done. (9) Simple microscope is used for general observations and compound microscope is used specialized observations that require higher magnification.

Q.8. Use Your brain power :

(1) How do the cells acquire definite shapes ?

Ans : The cells acquire definite shape due to their cell wall and plasma membrane.

(2) What are the needs of cells ?

Ans : Cells need oxygen, nutrients and water.

(3) Why should dry and wet waste be collected separately?

Ans : The wet waste can be decomposed using bacteria. This type of waste is called biodegradable. The dry waste is not biodegradable. It remains unchanged for a long period. The strewn wastes like this causes ill health and also make a place look dirty. The waste likes plastic causes harmful effects in the surroundings. We can separate dry and wet waste. decomposition of wet waste can make good fertilizers whereas

dry waste can be sold to scrap dealers. Therefore, in order to have a better management of wastes, we should collect dry and wet waste separately.

(4) Why is yoghurt mixed in the batter or dough for making rava- idli, bhature,naan .

Ans : Yoghurt contains useful bacteria, They cause fermentation in the batter or dough if added in proper proportion. In this process, the heat, carbon dioxide and other gases are become tasty and light. Therefore, is yoghurt mixed in the batter of dough for making rava. idli, bhature, naan.

(5) How do preparations like yoghurt, idli, dosa become easy to digest ?

Ans : Preparations like idli - dosa are made from the batter that is fermented. Yoghurt is also set with help of useful bacteria which carry out fermentation. The process of fermentation increases the volume of the substance and make them light, tasty and more nourishing due to increased vitamin content. Therefore, they are easy to digest.

(6) What is the corelation between the normal body temperature of humans which is 37^{0}C and the optimum temperature for the growth of micro-organisms, 15^{0}C to 35^{0}C?

Ans : Bacteria grow maximally in the temperture range between 15 ^{0}C to 35 ^{0}C. In human body their growth does not take place with the same, the same intensity. If any microbe

enters our body, the temperature automatically rises resulting into fever which kills these disease causing microbes. Thus naturally man is protected against bacterial attacks.

Q.9 Answer the following questions.

(1) Which is the units used for measuring the size of cellular structure ?

Answer : The units used for measuring the size of cellular structure is micrometer and nanometer.

(2) What are the different shapes of cell ?

Answer : Cells are of many different shapes e.g. circular, rod-shaped, columnar, spiral, oval, rectangular, etc.

(3) How many types of cells are there? Which are those types ?

Answer : There are two main types of cells, (1) Animal cells (2) Plant cells

(4) What is Fermentation ? Give two uses of Fermentation ?

Answer : The chemical process of conversion of one type of carbon compound into another type of carbon compound by the action of micro-organisms is called fermentation.

(5) What is Food poisoning ? Give any two uses of food poisoning ?

Ans : When some microbes grow in the food they release toxic materials, called enter toxins. This enter toxin makes the food poisonous. Such toxins spoil the food. Loose motions and vomiting caused by eating such spoiled food.

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