10. Cell and Cell Organelles

Practice Questions

Question. 1) Write the notes on.

1) Plasma Membrane

Ans: 1) Plasma Membrane are made of proteins and fatty acids.

2) It is outer layer of animal cell and inner layer of plant cell.

3) Plasma membrane is said to be a selectively permeable membrane as it allows some substances to enter the cell, while prevents other substances.

4) Due to cell membrane, the pressure of fluid/ plasma remains balanced.

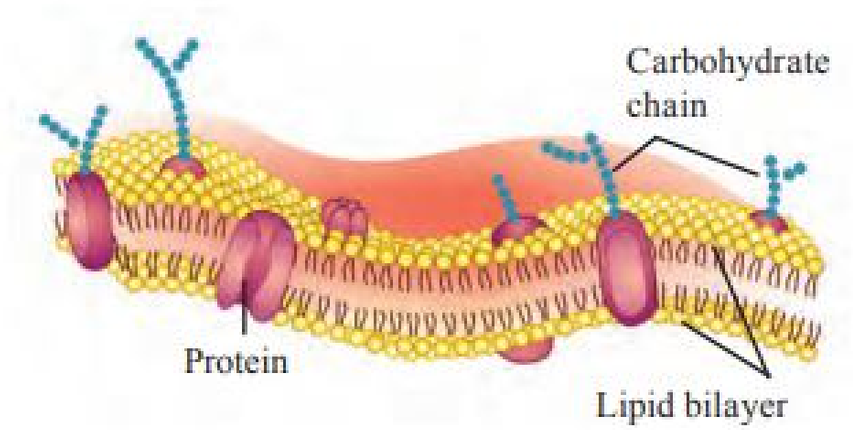
5) Plasma membrane separates the cell components from outer environment and gives the cell an independent identity.

6) This covering is elastic and fragile and its thickness is 70Aº.

7) This covering is of two layers and made up of fats and proteins.

Functions: 1) The useful substances such as water, salts, oxygen enter the cells. 2) The useful substances like

proteins remains in cell only. 3) The waste substances like carbon dioxide are released/ thrown outside from cells.



Structure of Plasma membrane

2) Nucleus

Ans: 1) The nucleus are a large circular organ in the cell. It is at the centre of animal cell while near plasma membrane of the plant cell.

2) The diameter of nucleus is approximately 6micrometer, it was invented in 1831 by Robert Brown.

3) Nucleus is made up of double layered membrane and there are nuclear pore on it. There is nucleoplasm inside nucleus.

4) Nucleus has one round nucleolus and it contains RNA, ribosomes and chromatin.

5) There are 85% RNA, 10% Acid and 5% proteins in nucleus. RNA in nucleus are formed from calcium ions.

6) The RNA is synthesized for the production/ formation of ribosomes in nucleus.

7) Chromatin are like thin thread and they are made of DNA and proteins.

Function: 1) It controls all metabolic activities. If the nucleus is destroyed, the cell will die.

2) Nucleus controls all cell division.

3) Nucleus controls all the activities of the cell and plays important role in cell division.

3) Mitochondria

Ans: 1) Mitochondria is double membrane structure, its outer membrane is porous and the inner membrane is deeply folded. These folds are called 'cristae'.

2) There is proteinaceous gel like matrix containing ribosomes, phosphate granules and DNA in mitochondria.

3) Mitochondria has capacity to produce its own proteins due to DNA.

4) With the help of enzymes, mitochondria oxidise carbohydrates and fats in the cell and large amount of energy is released in this process. So it is called as energy generation centre of the cell.

5) This energy is stored in the form of an energy-rich compound called ATP (Adenosine Tri Phosphate).

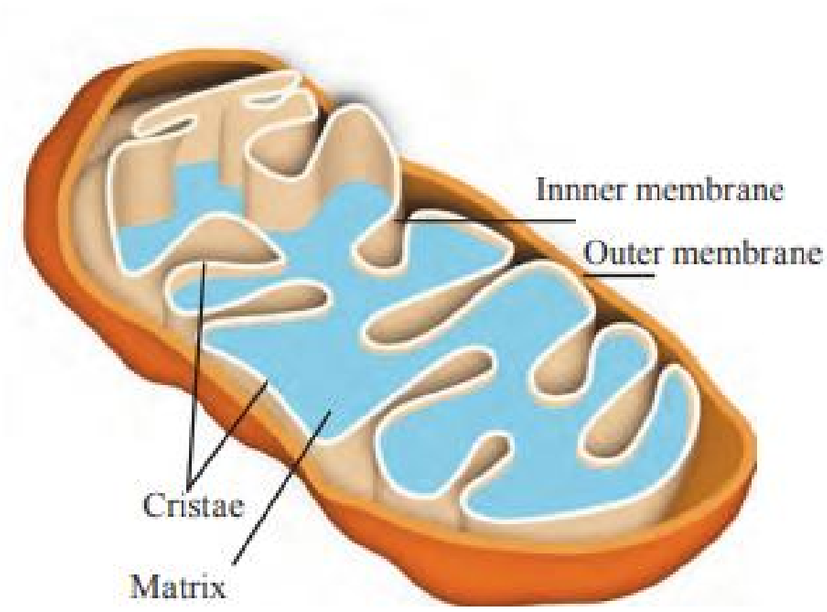
6) Plant cells have less mitochondria than animal cells.

Function: 1) To produce energy-rich compound ATP.

2) The energy stored in ATP is used to form chemical compounds like proteins, carbohydrates and lipids.

3) The ATP is used to perform mechanical functions like muscle movements, conduction of nerve impulses and formation of heat etc.

Diagram of mitochondria



4) Chloroplast

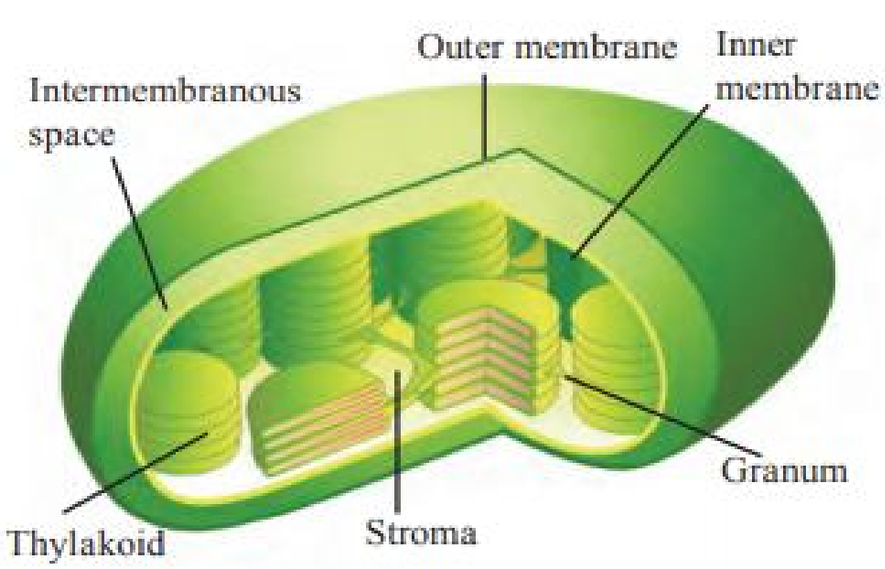
Ans: The structure of Chloroplast is circular and they have stroma and granum in it.

1) Stroma: The stroma is colourless fibres in chloroplast. They are made of proteins and contains enzymes, DNA, ribosomes and carbohydrates that are necessary for photosynthesis.

2) Granum: The circular disc in stroma is called thylakoid and their group is called as granum. Chloroplasts can produce proteins as well as replicate themselves, as they have their own DNA and ribosomes.

Functions: 1) Chloroplasts convert solar energy to chemical energy (food). 2) Chromoplasts give different colours to flowers and fruits. 3) Leucoplasts are involved in the synthesis and storage of food like starch, oils and proteins.

Diagram of chloroplast



5) Ribosomes

Ans: The ribosomes are large molecules in cells. Their shape is like circular grain particles. These large molecules are found in cytoplasm, nucleus and endoplasmic reticulum.

Function: 1) To form proteins with the help of RNA for the formation of DNA in the nucleus. 2) Doing protein synthesis in cell for the growth of all cell organelles and cytoplasm.

Question. 2) Which components are present in the cell? Write their information.

Ans: Cytoplasm and cell organelle components are present in the cell.

1) Cytoplasm: a) Each cell is made of fluid. Fluid is a gel like sticky substance. The liquid other than nucleus is called cytosol.

b) The part of cytoplasm other than organelles is the cytosol. Cytosol stores vital substances like amino acids, glucose, vitamins, etc. In animal cells, cytoplasm is more granular and dense.

c) There are 65 to 90% of water, 2.03% of fats, 0.7% of RNA, 0.1% of inorganic salts, proteins, 10 to 20% enzymes, 1% of carbohydrates, 0.4% of DNA, etc. in cytoplasm.

2) Cell organelles: a) An organelle is a specialized subunit having specific function within the cell.

b) They are made of fat and protein coverings.

c) Various cell organelles are scattered in cytoplasm. These organelles are organs of the cell.

d) Each cell organelle is living organism and performs a specific function. It has specific shape, structure and has specific covering around it. This covering keeps fluid of cell organelle separate from cytoplasm.

Question. 3) Who invented the cell and how?

Ans: The cell was invented by the scientist named Robert Hooke in 1665. He took a thin part of cork tree and observed it under a self-made microscope. Then he found a small empty rooms in it like honeybee hive. He named these empty rooms as cell. In this way Robert Hooke invented the structural elements of the living organisms. But the cells he observed were dead.

Question. 4) Differentiate between DNA and RNA.

DNA (Deoxyribo Nucleic Acid)	RNA (Ribo Nucleic Acid)
1) It is chain of double spiral molecules.	1)It is chain of single spiral molecules.
2) DNA is found in the	2)RNA is found in

nucleus of the cell.	cytoplasm.
3) Each nucleotide is made of pentose sugar 5 molecules, phosphate group 4 molecules, and nitrate 4 molecules.	3)Each nucleotide is made of ribose sugar 4 molecules, phosphate group 4 molecules, and nitrate 4 molecules.

Question. 5) Give reasons.

1) Mitochondria is called as the powerhouse of the cell.

Ans: 1) Mitochondria has proteinaceous gel like matrix containing ribosomes, phosphate granules and DNA.

2) It has capacity to produce its own proteins due to DNA.

3) With the help of enzymes, carbohydrates and fats are oxidised in mitochondria and large amount of heat is released in this process. Therefore, Mitochondria is called as the powerhouse of the cell.

2) Lysosomes are called suicide bags.

Ans: When a cell becomes old or is damaged, lysosomes burst and enzymes digest their own cells. Therefore, lysosomes are called suicide bags.

Question. 6) Write the functions of Golgi complex.

Ans: 1) Golgi complex is the secretory organ of the cell.

2) It modifies the materials produced in the cytoplasm/ cell and mix the enzymes in it.

3) It dispatches the secretory materials, proteins, fats and mucus inside or outside of the cell, where needed.

4) It helps in the formation of the cell wall, plasma membrane and lysosomes.

5) It produces vacuoles and secretory vesicles.

Question. 7) Identify the different term.

1) Glucose, Amino acids, Vitamins, Cytoplasm

Ans: Cytoplasm (Other are substances from cytosol.)

2) Proteins, Water, Glycogen, Pectin

Ans: Pectin (Cell walls are formed from this carbohydrate and others take part in work of cells.)

Question. 8) Identify the correlation.

1) _____: Chlorophyll: : Red: Carotene

Ans: Green

2) Chloroplasts: _____: : Chromoplasts: Colours to flowers and fruits

Ans: Conversion into food

Question. 9) Identify whether the statements are true or false.

1) Osmosis is a physical process.

Ans: True

2) The endoplasmic reticulum is connected to nucleus from inner side.

Ans: True

3) The nucleus can be seen by naked eyes.

Ans: False (The nucleus is observed under electron microscope)

4) Chlorophyll converts solar energy into chemical energy.

Ans: True

5) The nerve cells (neuron) are the longest cells in the human body.

Ans: True

6) The unit used to measure the shape of cell is millimetre.

Ans: False (The unit used to measure the shape of cell is micrometre.)

7) Chromoplasts give different colours to flowers and fruits.

Ans: True

Question. 10) Write the answers of following questions in one sentence.

1) Which polymers are formed in cell wall?

Ans: The polymers like lignin, suberin, and cutin are formed in cell wall.

2) What are genes?

Ans: The functional factor in chromosomes is called genes.

3) Who is called as demolition squad?

Ans: Lysosomes is called as demolition squad.

4) Where is the National Centre for Cell Science located?

Ans: The National Centre for Cell Science is located in the campus of Savitribai Phule Pune University, Pune.

5) Endoplasmic reticulum are not found in which microorganisms?

Ans: Endoplasmic reticulum are not found in virus, bacteria and blue green algae (Cyanobacteria).

6) What is smooth Endoplasmic reticulum?

Ans: The cells which do not have ribosome granules on its outer surface is smooth Endoplasmic reticulum.

7) What is the work of lysosomes during starvation?

Ans: During starvation, means if there is no food lysosomes does the work of providing the energy needed in the body with the help of stored proteins and fats.

8) What is free permeable membrane?

Ans: The cell walls are inorganic, it can freely carry all types of substances. Therefore, it is called free permeable membrane.

9) The pectin sugar is made from what?

Ans: The pectin sugar is made from calcium and magnesium.

10) What is the size of cells?

Ans: The size of cells is 0.1µm to 18cm.