

Exercises

I. Tick (✓) the correct options.

- The genetic information of an organism is present in the
 - ribosomes.
 - vacuoles.
 - cytoplasm.
 - plastids.
- Deoxyribonucleic acid (DNA) in plant and animal cell is present in the
 - cell wall.
 - nucleus.
 - chloroplasts.
 - lysosomes.
- Cellular respiration occurs in cell organelles called
 - mitochondria.
 - chloroplasts.
 - nucleus.
 - cytoplasm.
- One of the differences between a plant and an animal cell is the presence of
 - nucleus.
 - mitochondria.
 - cytoplasm.
 - Chloroplasts.
- The organelle that accumulates excess water and removes it from the cell is called
 - food vacuole.
 - contractile vacuole.
 - Golgi apparatus.
 - Endoplasmic reticulum.

6. The cell wall in a plant cell is mainly made up of

- A. DNA.
- B. cellulose.
- C. glucose.
- D. sugar.

7. The centriole helps in moving chromosomes during

- A. cell division.
- B. cell death.
- C. cell growth.
- D. cell elongation.

8. Chloroplasts in a plant cell contain

- A. endoplasmic reticulum.
- B. chlorophyll.
- C. ribosomes.
- D. Centrioles.

Ans: 1. chromosomes 2. Nucleus 3. Mitochondria 4. chloroplasts

5. contractile vacuole 6. cellulose 7. cell division 8. chlorophyll

II. II. Tick (/) the true statements and cross (X) the false ones.

- 1. Human beings are multicellular.
- 2. The basic living unit of an organism is a cell.
- 3. Paramecium and Euglena are multicellular animals.
- 4. The nucleus contains chromosomes.
- 5. Lysosomes are called the powerhouse of the cell.

Ans: 1 ✓ 2 ✓ 3 X 4 ✓ 5 X

III. Answer the following questions in one sentence.

1. Which cells have a cell wall?
2. Name the organelle that is the site of protein synthesis in a cell.
3. State the function of the endoplasmic reticulum.
4. What is epidermis ?
5. State the function of the nuclear membrane.

Answer:

1. Plant cells have a cell wall.
2. Ribosomes are the sites of protein synthesis in the cells.
3. The endoplasmic reticulum is responsible for the production of proteins and lipid components in the cell and also help in the transport of proteins.
4. The layer of cells, which is the outermost part of the fruit or leaf, is the epidermis.
5. Nuclear membrane is porous and allows movement of materials in and out of the nucleus.

IV. Answer the following questions in two to three sentences.

1. Why are stains or dyes used to observe cells?
2. The cell is the basic structural and functional unit of every living organism. Explain.
3. What is cytoplasm?
4. How is flagella different from cilia? What are their functions?
5. Where are chromosomes found in a cell? State their functions.
6. What is a tissue?

Answer:

1. Cells are transparent and colourless. They are therefore difficult to observe under a microscope. That is why stains (dyes) of different colours are used to observe cells and their fine structure.
2. The basic structural unit of every living organism is a cell. This means that every living organism is made up of one or more cells. The cell is also the functional unit of a living organism. This means that a living organism carries out most of its functions in its cells.

3. The cell contains a jelly-like material called cytoplasm which has many dissolved enzymes, amino acids, sugars and other molecules. Several cell organelles are present in cytoplasm.
4. Flagella and cilia are hair-like structures projecting from the surface of certain kinds of cells. Flagella are long and few in number while cilia are short and numerous. These structures have certain functions. For example, the cilia of the cells that line the trachea (windpipe) remove foreign particles. In unicellular organisms, flagella and cilia help in the movement of the organism.
5. Chromosomes are thread-like bodies found in the nucleus of a cell. Chromosomes carry genes in the form of DNA. They help in cell division.
6. The group of cell performing the same function is known as tissue.

V. Answer the following questions in detail.

1. Describe the nucleus of a cell.
2. Label the cell organelles in the cells given below. How are the two cells different?

Answer:

1. The nucleus is an important part of a cell. It controls the activities of the cell. It is bound by a porous membrane called the nuclear membrane. This membrane allows movement of materials in and out of the nucleus. The fluid inside the nucleus is called nucleoplasm. The nucleus also contains a number of thread-like bodies called chromosomes. Chromosomes carry genes in the form of DNA.

2. Draw diagram(self)

Difference between plants and Animal cell are

Plant Cell

- The outermost layer, the cell wall, is made up of cellulose
- Has chloroplasts
- Most plant cells have a large central vacuole in the cytoplasm

Animal Cell

- The outermost layer is the thin, flexible cell membrane
- Does not have chloroplasts
- Small vacuoles in the cytoplasm

Higher Order Thinking Skills

Give reasons.

1. Lysosomes digest damaged cells.
2. Mitochondria are called the powerhouse of the cell.
3. Water and gases pass through the cell wall of a plant cell.
4. Nucleus is a very important part of the cell.

Answer:

1. Lysosomes contain enzymes that can digest proteins and fats. When a cell is damaged, the lysosomal enzymes are released. These enzymes break down the components of the damaged cell and make them available for use by the surrounding cells.
2. Most cells contain several mitochondria. When a plant or an animal cell requires energy, the glucose molecules are broken down to release energy through a process called cellular respiration. Cellular respiration occurs in the mitochondria. Therefore, mitochondria are called the powerhouse of the cell.
3. The cell wall is a tough and rigid layer that provides strength and protection to the cell. The cell wall is porous and allows water, oxygen and carbon dioxide to enter and leave the cell.
4. The nucleus is an important part of a cell as it controls the activities of the cell.