Section A (Objective Question)

A. Multiple Choice Questions

Q1. Read the following terms and select the pair that is related to the inheritance of characters.

(a) cell wall and cell membrane (b) chromosome and mitochondria

(c) chloroplast and cell membrane (d) chromosome and genes

Answer: (d) chromosome and genes

Explanation: Chromosomes and genes are responsible for the inheritance of characters. Chromosomes are present in the nucleus. Genes are the parts of chromosomes that consist of DNA.

Q2. Choose the correct statement:

(a) Genes are located in the chromosomes. (b) The cell is located in the nucleus.

(c) Chromosomes are located in the nucleolus. (d) Cell membrane surrounds the nucleus.

Answer: (a) Genes are located in the chromosomes.

Explanation: Genes are the units of inheritance located in the chromosomes. The nucleus is located in cells, but not the cell is located in the nucleus. Chromosomes are present in the nucleus, not the nucleolus. The nucleus is surrounded by the nucleus membrane, not the cell membrane.

Q3. The thread-like structures present in the nucleus are

(a) nucleolus (b) chromosomes (c) genes (d) ribosomes

Answer: (b) chromosomes

Explanation: The nucleolus is a spherical body present on the nucleus. Genes are present on chromosomes which help in the inheritance or transfer of characters from the parents to the offspring. Ribosomes are present in the cytoplasm. Hence the answer is (b) chromosomes.

Q4. Under a microscope, Paheli observes a cell that has a cell wall but no distinct nucleus. The cell that she observes is

(a) a plant cell (b) an animal cell (c) a nerve cell (d) a bacterial cell

Answer: (d) a bacterial cell

Explanation: A bacterial cell is a prokaryote and it lacks a distinct nucleus and cell organelles. Hence the answer is (d) a bacterial cell.

Q5. Cheek cells do not have _____

(a) cell membrane (b) nucleus (c) golgi apparatus (d) plastids

Answer: (d) plastids

Explanation: Plastids are present only in plant cells. Cheeks cells are present only in animals hence the answer is (d) plastids.

Q6. Identify the correct statement about cells.

(a) All the cells have a nucleus. (b) Cells of an organ have similar structures.

(c) Cells of tissue have a similar structure. (d) The shape of all types of cells is round.

Answer: (c) Cells of tissue have a similar structure.

Explanation: Only eukaryotic cells have well-defined nuclei hence option a) is wrong. Cells of an organ comprise different cell types so statement b) is wrong. Cells are of different shapes and sizes therefore option d) is wrong.

B. Very Short Answer Questions

Q1. In leaves, name the cell organelle and pigment that is responsible for green colour.

Answer: chloroplast and Chlorophyll

Q2. In a cell, where are the genes located?

Answer: Chromosomes are present within the nucleus.

D. Match the terms given in column I with their functions given in column II and fill in the blanks given below the table:

Column I	Column II
A. Chloroplast	i) Carries hereditary characters.
B. Cell membrane	ii) Controls the activities of cells.
C. Nucleus	iii) Site of photosynthesis.
D. Chromosome	iv) Controls the movement of materials into and out of cells.

Answer:

Column I	Column II
A. Chloroplast	iii) Site of photosynthesis.
B. Cell membrane	iv) Controls the movement of materials into and out of cells.
C. Nucleus	ii) Controls the activities of cells.
D. Chromosome	i) Carries hereditary characters.

Section B

II. Short Answer Questions

Q1. Where are chromosomes found in a cell? State their function.

Answer: Chromosomes are thread-like structures present in the nucleus that carry genes. All the necessary information required for transferring characteristics from the parents to the offspring is stored in the genes. Inheritance of characteristics is possible only because of chromosomes.

Q2. "Cells are the basic structural units of living organisms". Explain.

Answer: Various components of plants and animals are constituted by cells. It is the smallest unit of life and is capable of all living functions. They are the building blocks of life. That is the reason why cells are referred to as 'the basic structural and functional blocks of life'.

Cells exist in various shapes and sizes and perform a wide range of activities.

Their shapes and sizes are related to the function they perform.

Q3. Explain why chloroplasts are found only in plant cells.

Answer: Chloroplasts are plastids required for the food-making process called photosynthesis, and thus they are only present in plant cells.

Q4. What are the functions of the cell wall in plant cells?

Answer:

The functions of cell-wall are as follows

- Acts as a protective layer.
- Provides shape to the cell.
- Control the cell expansion
- Preventing water loss from the cell.
- Provides strength and rigidity to the cell.

Q5. Cells consist of many organelles, yet we do not call any of these organelles a structural and functional unit of living organisms. Explain.

Answer: Cell organelles like mitochondria, ribosomes, nuclei, etc, have specific functions and do specific functions, however, they can not be referred to as the functional unit of the cell. This is because they will perform only specific functions within a living cell. They can not act as units. The nuclei, on the contrary, have an independent existence. it's the littlest, structural, and useful unit of life.

Q6. Name the part of the cell concerned with the following?

1. Liberation of energy
2. Synthesis of proteins
3. Transmission of heredity characters from parents to offspring
4. Initiation of cell division
5. Hydrolytic in function
6. Entry of only certain substances into and out of the cell.

Answer:

1. Mitochondria
2. Ribosomes
3. Chromosomes
4. Centrosome
5. Lysosomes
6. Plasma membrane/cell membrane

Q7. Mention three features found only in plant cells and one found only in animal cells.

Answer: Three features found only in plant cells are:

1. Presence of cell wall.
2. Presence of large vacuole.
3. Presence of plastids.

One feature only found in animal cells is the presence of centrosome.

Q8. State the differences between Plant and Animal Cell.

Answer:

Plant cell	Animal cell
They are large in size	They are smaller than plant cells
The cell wall is present	The cell wall is absent
Vacuoles are large	Vacuoles are small
Plastids could be seen	Except for Euglena, plastids could not be seen in animal cells.

Section C

III. Long Answer Questions

Q9. State the major functions of the following-

1. Plasma membrane
2. Ribosome
3. Mitochondria
4. Golgi apparatus
5. Cytoplasm
6. Chromosomes
7. Vacuoles

Answer: The major functions are as follows-

1. Plasma membrane —
    i. Separates contents of a cell from its surroundings.
    ii. Regulates the entry of certain solutes and ions.
    iii. Maintains the shape of the cell in animal cells.
2. Ribosome —
    i. Protein synthesis
3. Mitochondria —
    i. Controls the cell functions.
    ii. Referred to as 'powerhouse of the cell', as energy is stored in the form of ATP.
    iii. Involved in cellular respiration to release energy.
    iv. Bearers of genes.
4. Golgi apparatus(in animal cells) —
    i. Synthesis and secretion of enzymes, hormones, etc.
    ii. Acrosomes of sperms are formed.
5. Cytoplasm —
    i. Contains organelles that perform a multitude of functions.
    ii. Performs all metabolic activities.
6. Chromosomes —

i. Passes genetic characteristics from parents to offspring.

7. Vacuoles —

i. Stores food, water, pigments, and waste products.

ii. Renders turgidity to the plant cell.

Q10. State the difference between eukaryotes and prokaryotes.

Prokaryotes	Eukaryotes
Most of them are unicellular	Most of them are multicellular
There is no nuclear membrane. So, the nucleus is poorly defined.	There is a nuclear membrane. So, the nucleus is well-defined.
Not all cell organelles are present	All the cell organelles are present.
Nucleolus is absent	Nucleolus is present
For example, blue-green algae, Bacteria	For example, plants, animal cells, and fungi.

IV. Picture Study:

Q11. Label the parts A to E in the given Fig. 8.2 diagram.

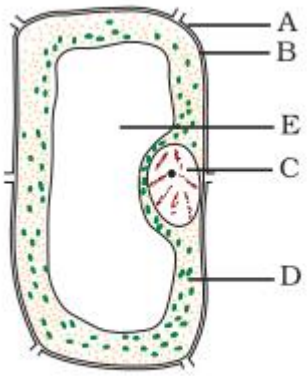
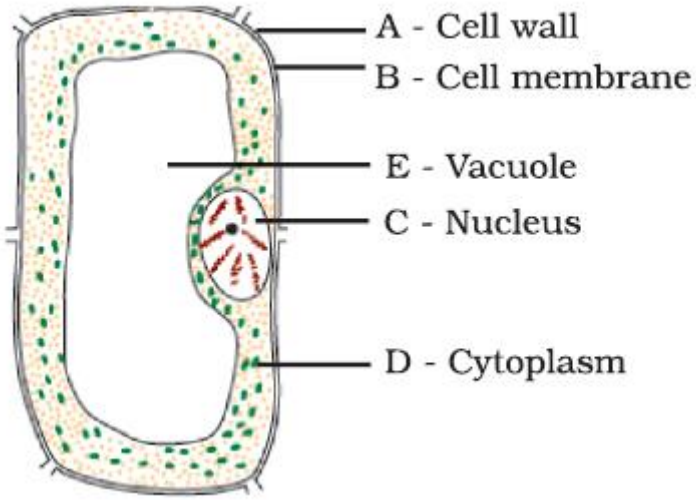
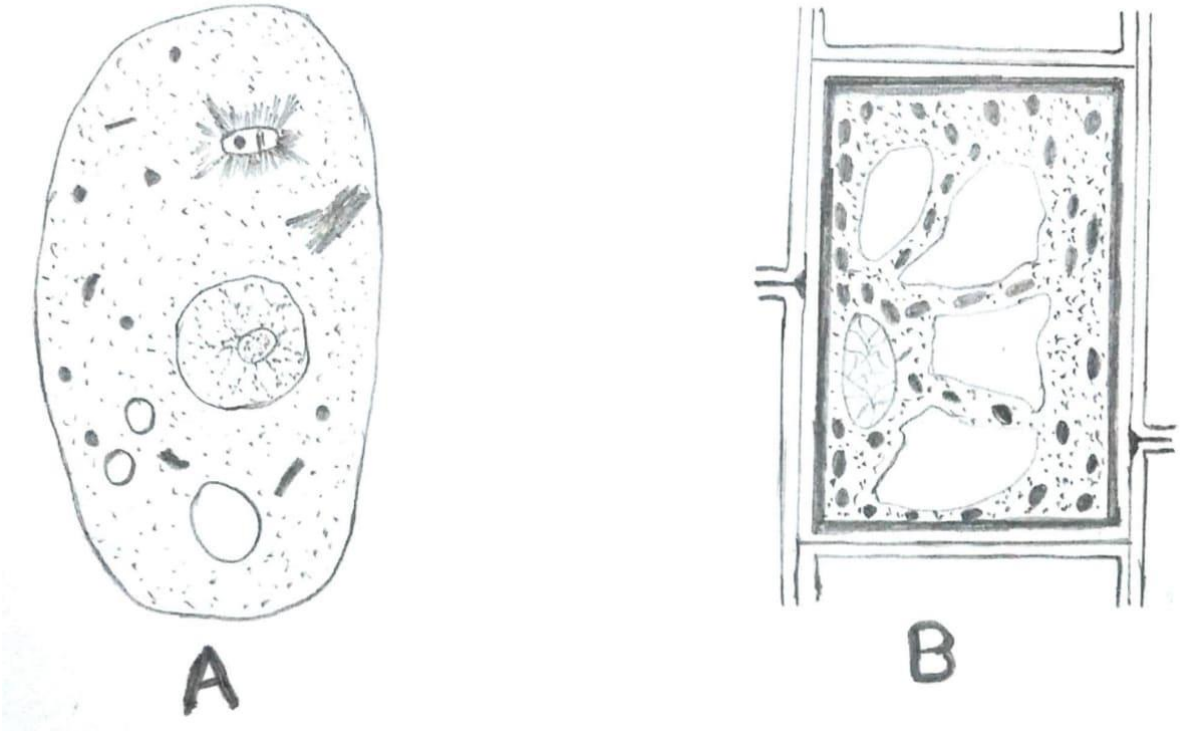


Fig. 8.2

Answer:



Q12. Given below are the sketches of two types of cells A and B.



(a) Which one of these is a plant cell? Give a reason in support of your answer.

(b) List the cell structures which are common to both types.

(c) Name the structures found only in plant cells and those found only in animal cells.

Answer:

(a) Figure B is a plant cell because in Figure B, the cell has a cell wall, and a large vacuole and the vacuole is seen pushing the nucleus to the periphery.

(b) Cell structures common to both the types in the figure are:

1. Nucleus
2. Mitochondria
3. Ribosome
4. Cell membrane
5. Lysosome
6. Endoplasmic reticulum
7. Golgi body

(c) The structures found only in plant cells are the Cell wall and Plastid. The structures found only in animal cells are centrosomes.