Biology
CH-5 The Fundamental Unit of Life
Intext Questions

Question 1:
Who discovered cells and how?
Answer 1:
Cells were discovered in 1665 by an English Botanist, Robert Hooke. He used a primitive microscope to observe cells in a cork slice.
Question 2:
Why is the cell called as the structural and functional unit of life?
Answer 2:
Cells constitute various components of plants and animals. A cell is the smallest unit of life and is capable of all living functions. Cells are the building blocks of life. This is the reason why cells are referred to as the basic structural and functional units of life. All cells vary in their shape, size, and activity they perform. In fact, the shape and size of the cell is related to the specific functions they perform.

Question 3:
How do substances like CO2and water move in and out of the cell? Discuss,
Answer 3:
The cell membrane is selectively permeable and regulates the movement of substances in and out of the cell.
Movement of CO2:
CO2 is produced during cellular respiration. Therefore, it is present in high concentrations inside the cell. This CO2 must be excreted out of the cell. In the cell's external environment, the concentration of CO2 is low as compared to that inside the cell. Therefore, according to the principle of diffusion, CO2 moves from a region of higher concentration (inside the cell) towards a region of lower concentration (outside the cell). Similarly, O2 enters the cell by the process of diffusion when the concentration of O2 inside the cell is low as compared to its surroundings.
Movement of water:
Water moves from a region of high concentration to a region of low concentration through the plasma membrane. The plasma membrane acts as a semi-permeable membrane, and this movement of water is known as osmosis. However, the movement of water across the plasma membrane of the cell is affected by the amount of substance dissolved in water.

Question 4:
Why is the plasma membrane called as a selectively permeable membrane?
Answer 4:
The cell membrane or the plasma membrane is known as a selectively permeable membrane because it regulates the movement of substances in and out of the cell. This means that the plasma membrane allows the entry of only some substances and prevents the movement of some other materials.

Question 5:
Fill in the gaps in the following table illustrating differences between prokaryotic and eukaryotic cells.

Prokaryotic cell	Eukaryotic cell
1. Size : generally small (1-10µm)	1. Size : generally larger (5-100µm)
2. Nuclear region: _____ _____ and known as _____	2. Nuclear region: well defined and surrounded by a nuclear membrane
3. Chromosome: single	3. More than one chromosome
4. Membrane bound cell organelles absent	4. _____ _____ _____.

Answer 5

Prokaryotic cell	Eukaryotic cell
5. Size : generally small (1-10µm)	5. Size : generally larger (5-100µm)
6. Nuclear region: poorly defined because of absence of nuclear membrane and known as Nucleoid	6. Nuclear region: well defined and surrounded by a nuclear membrane
7. Chromosome: single	7. More than one chromosome
8. Membrane bound cell organelles absent	8. Membrane bound cell organelles such as mitochondria, plastids, etc are present

Question 6:
Can you name the two organelles we have studied that contain their own genetic material?
Answer 6:
Mitochondria and plastids are the two organelles that contain their own genetic material. Both these organelles have their own DNA and ribosomes.
Question 7:
If the organisation of a cell is destroyed due to some physical or chemical influence, what will happen?
Answer 7:
Cell is the smallest unit of life, which is capable of all living functions. If the organisation of a cell is destroyed due to some physical or chemical influence, then the ability of the cell to perform all living functions such as respiration, nutrition, excretion, etc. would be affected.

Question 8:
Why are lysosomes known as suicide bags?
Answer 8:
Lysosomes are membrane-bound vesicular structures that contain powerful digestive enzymes. These enzymes are capable of breaking down any foreign food particle or microbes entering the cell. Sometimes, lysosomes can cause self-destruction of a cell by releasing these digestive enzymes within the cells. Hence, they are also known as 'suicidal bags'.

Question 9:
Where are proteins synthesized inside the cell?
Answer 9:
Ribosomes are the site for protein synthesis. Ribosomes are very small structures found either in a free state, suspended in the cytoplasm, or attached to the surface of the endoplasmic reticulum. They are composed of ribonucleic acids and proteins.