

**Important Questions Class 9 Science Chapter 5:** Chapter 5 of Class 9 Science, "The Fundamental Unit of Life," explores the cell as the basic structural and functional unit of living organisms. It covers cell theory, distinguishing between prokaryotic and eukaryotic cells, and discusses various cell organelles, including the nucleus, mitochondria, and ribosomes, highlighting their functions.

The chapter emphasizes the importance of the cell membrane in regulating the entry and exit of substances, illustrating the concept of diffusion and osmosis. Understanding cell structure and function is crucial for comprehending more complex biological processes, making this chapter foundational for future studies in biology.

## **Important Questions Class 9 Science Chapter 5 Overview**

Chapter 5 of Class 9 Science, "The Fundamental Unit of Life," emphasizes the significance of understanding cells as the basic units of life. Important questions from this chapter assess comprehension of key concepts such as cell theory, the differences between prokaryotic and eukaryotic cells, and the functions of various organelles.

These questions are crucial for reinforcing foundational knowledge in biology, as they help students grasp the complex interactions within cells and their roles in living organisms. Mastery of these concepts not only aids in exam preparation but also lays the groundwork for future studies in life sciences.

## **Important Questions Class 9 Science Chapter 5 The Fundamental Unit of Life**

Below is the Important Questions Class 9 Science Chapter 5 The Fundamental Unit of Life -

**Q1. Which one of these can be made into a crystal?**

- (a) A Bacterium
- (b) An Amoeba
- (c) A Virus
- (d) Sperm Soln

**Answer: The correct option is (c). A Virus**

Explanation: Since viruses are incapable of self-reproduction or metabolism, they might be viewed as intermediaries between non-living and living entities. The virus requires a host for all of its operations. Viruses can also be preserved as compounds that resemble crystals. Millions of viral cells come together to form virus crystals.

**Q2. If you allow a cell to swell, it will become more prominent.**

- (a) The cell's water molecules are more concentrated than those in the surrounding medium.
- (b) Water molecules are more concentrated in the surrounding medium than in the cell.
- (c) The cell's water molecules are the same as those in the surrounding medium.
- (d) Water molecules concentration does not matter

**Answer: (b) Water molecules are more concentrated in the surrounding medium than in the cell.**

Explanation: Water molecules are more concentrated in the surrounding medium than in the cell. This causes the cell to swell.

**Q3. The components of chromosomes are**

- (a) DNA
- (b) protein
- (c) DNA, protein
- (d) RNA Solution

**Answer: (c) DNA, protein**

**Q4. Which of these options is not a function Ribosomes**

- (i) It aids in the production of protein molecules
  - (ii) It aids in the production of enzymes
  - (iii) It aids in the production of hormones
  - (iv) It aids in the production of starch molecules
- (a) (i), and (ii).
  - (b) (iii), and (iii).
  - (c) (iii), and (iv).

(d) (iv), and (i).

**Answer: The correct option is (c), (iii), and (iv).**

Explanation: The ribosomes are responsible for protein synthesis. Protein is the basis of enzymes. Ribosomes are responsible for the production of enzymes and protein. Therefore, options (iii) and (iv) are incorrect.

**Q5. Which one of these is not connected to the endoplasmic-reticulum?**

- (a) It acts as a transport channel for proteins between the nucleus, cytoplasm and the cell membrane.
- (b) It moves materials between different regions of the cytoplasm
- (c) It could be used for energy generation
- (d) It could be the location for biochemical activities in the cell

Answer: (c) It could be the location of energy generation

Explanation: The production of energy is the role of mitochondria. Proteins can be transported by the endoplasmic reticulum (ER), a network that connects the nucleus to the cytoplasm. It makes it easier for materials to move between cells.

**Q6. Choose the correct one from below. Plasmolysis in the plant cell is defined as the process of?**

- (a) Plasma membrane in hypotonic media is broken down (lysis).
- (b) shrinkage in the cytoplasm within the hypertonic medium
- (c) shrinkage in the nucleoplasm
- (d) None of them

**Answer (b) shrinkage in the cytoplasm within the hypertonic medium.**

Explanation: A cell kept in hypertonic solutions loses most of its fluid. This causes shrinkage in the protoplasm. This happens when the environment is arid.

**Q7. Here are some definitions of osmosis. Please read carefully to ensure you choose the correct definition.**

- (a) Water molecules move from one region with higher concentrations to another through a semipermeable membrane
- (b) Movement of solvent molecular from higher to lower concentration

(c) Movement of solvent molecules through permeable membranes from higher to lower concentrations

(d) Movement of the solute molecules from lower to higher concentrations of solution through a semipermeable membrane

**Answer: (a) Water molecules move from one region with higher concentrations to another through a semipermeable membrane.**

Explanation: Osmosis is a unique type of diffusion in which water molecules flow from an area of higher concentration to another of lower concentrations across semipermeable membranes.

**Q8. Cells will expand if the concentration of water molecules within the cell is higher than the concentration of water molecules.**

(a) In the surrounding medium

(b) The concentration of water molecules in the surrounding medium is higher than the concentration in the cell.

(c) The cell's water molecules are the same as those in the surrounding medium.

(d) The concentration of water molecules is irrelevant

**Answer: The correct option is (b) The concentration of water molecules in the surrounding medium is higher than the concentration in the cell.**

Explanation:

Osmosis is a spontaneous process where solvent molecules pass across a partly permeable membrane from an area with a lower solute concentration to one with a greater solute content. The solute concentrations become equal as a result.

Endosmosis is the inward flow of a solvent from the exterior to the interior. A hypotonic solution is the cause.

**Q9. Which of these options is not a function of ribosomes?**

1. It aids in the manufacture of protein molecules.
2. It is helpful in the manufacture of enzymes.
3. It aids in the manufacture of hormones
4. It aids in the manufacture of starch molecules.

(a) I and (II)

(b) II and III

(c) III and IV

(d) IV, I

**Answer: the correct answer is (c)**

Explanation:

Dense, spherical, or granular particles that are free to move around in the matrix are known as ribosomes. Additionally, they remain affixed to the endoplasmic reticulum. They are present in both bacterial and eukaryotic cells and lack a membrane. They are necessary for the production of proteins. Not all hormones are proteins, but all enzymes and hormones are.

**Q10. Which one of these is not connected to the endoplasmic reticulum?**

(a) It acts as a transport channel for proteins between the nucleus and the cytoplasm

(b) It moves materials between different regions of the cytoplasm

(c) It could be used for energy generation

(d) It could be the location for biochemical activities in the cell

**Answer: The correct choice is (c)**

Explanation:

Endoplasmic Reticulum is a membranous network that connects to the outer membrane of the nucleus from one end and to the plasma membrane from the other.

It comes in three forms.

(i) Cisternae-closed fluid-filled sac

(ii) Vesicles

(iii) Tubules

It comes in two types: smooth endoplasmic reticulum, i.e. it has no ribosomes and rough endoplasmic reticulum, which has ribosomes.

**Q11. Which of these are covered by one membrane?**

(a) Mitochondria

(b) Vacuole

(c) Lysosome

(d) Plastid

Answer:

1. c) Lysosomes,

Explanation: These tiny, spherical, sac-like structures are uniformly dispersed throughout the cytoplasm and are packed with potent enzymes that may break down or digest any organic molecule. The rough endoplasmic reticulum is the source of these enzymes.

These functions are performed in the body.

1. They aid in the digestion of large molecules within cells.
2. They help protect against viruses and bacteria.
3. Lysosomes use their cell organelles to digest starved cells. Cell death is the result. These lysosomes can also be called suicide bags or cell demolition squads.

#### **Q12. Who discovered cells, and how?**

Answer:

The basic structural and functional building blocks of all living organisms are cells. In 1665, British physicist Robert Hooke coined the term "cells." Hooke was the first to use a microscope to study living organisms. Using a microscope, he studied a tiny slice of cork and observed formations that resembled honeycombs. Robert Hooke named these formations cells.

After creating his microscope lenses, which were far more powerful than those used at the time, Antonie Van Leeuwenhoek quickly produced other discoveries. He was the first to use a microscope to study human cells and germs.

With the aid of microscopes, more information about cells was discovered. It was challenging to see the complex features inside cells under a light microscope. To enable easier viewing of items smaller than cells, the electron microscope—a more durable instrument than the light microscope—was created.

#### **Q12. Why is the cell called the structural and functional unit of life?**

Answer:

The tiniest unit of life, a cell, is in charge of all aspects of existence. Every living organism is made up of cells. They are their biological, structural, and functional elements. Moreover, a cell is capable of self-reproduction. As a result, they are referred to as the foundation of life.

The cell is the most crucial unit in the formation of our bodies. Cells make up every organ in our body. Additionally, cells divide and proliferate to produce gametes and new organs. For the reasons outlined above, a cell's ability to divide and proliferate makes it a functional living unit.

- Because all living organisms are composed of cells, the cell is known as life's structural and functional unit.
- Cells are essential for many life processes, including maintaining life.
- Cells also provide structure, form, nutrient processing, and energy conversion.
- Multicellular organisms possess specialised cells that perform specific functions.

**Q13. Explain why ozone is thermodynamically less stable than oxygen.**

Answer: Because the breakdown of ozone releases heat ( $\Delta H$  is negative) and increases entropy ( $\Delta S$  is positive), it is thermodynamically inelastic with oxygen. Oxygen conversion is made possible by these two reactions, which reinforce one another and produce large negative Gibbs energy changes ( $\Delta G$ ).

**Q14. What do you mean by cell organelles?**

Answer:

Cell organelles are the cellular constituents of cells. Both membrane-bound and non-membrane organelles are included in this group of cell organelles. They have various forms and functions and are found in cells. Cells must cooperate and coordinate in order for them to operate normally. Some contribute to cell movement and reproduction, but the majority offer support and shape. Organelles can be divided into three categories based on whether or not they have a membrane.

- Organelles in cells without membranes include the cytoskeleton, ribosomes, and cell wall.
- Lysosomes and the endoplasmic reticulum are both solitary membrane-bound organelles. The reticulum is an isolated membrane-bound organelle that is exclusive to symbionts of eukaryotic cells.
- The nucleus, mitochondria, and chloroplast are the only two membrane-bound organelles found in eukaryotic cells.

## **Benefits of Solving Important Questions Class 9 Science Chapter 5**

Solving important questions from Class 9 Science Chapter 5, "The Fundamental Unit of Life," offers several benefits:

**Enhanced Understanding:** Important Questions Class 9 Science Chapter 5 reinforces key concepts about cell structure and function, helping students grasp fundamental biological principles.

**Improved Retention:** Regular practice aids memory retention, making it easier to recall information during exams.

**Exam Preparation:** Familiarity with Important Questions Class 9 Science Chapter 5 boosts confidence and equips students for various question formats they might encounter in assessments.

**Critical Thinking:** Engaging with these questions encourages analytical thinking and problem-solving skills, essential for scientific inquiry.

**Identifying Weak Areas:** Practicing important questions helps identify topics that need further review, allowing for targeted study.

**Application of Knowledge:** It promotes the application of theoretical knowledge to practical scenarios, deepening overall comprehension of the subject.