CBSE Test Paper 02

Chapter 05 The Fundamental Unit of Life

1. Well defined nucleus is absent in_____**(1)**

   a. Prokaryotic cell
   b. Plant cell
   c. Animal cell
   d. Eukaryotic cell

2. Which out of the following is living? **(1)**

   (a) Plasma membrane
   (b) Cell-wall
   (c) Protoplasm
   (d) Nucleus

   a. (a), (c) and (d) are correct
   b. (b) and (c) are correct
   c. All of these
   d. (a) and (b) are correct

3. **Statement A :** The secreted proteins are packed inside the secretory vesicles which are pinched off from the Golgi apparatus.
   Statement B : ER is absent in the red blood cells of mammals.
   Which of the two statement(s) is/are true? **(1)**

   a. Neither statement A nor statement B
   b. Statement B
   c. Both the statements - A and B
   d. Statement A

4. Which organelle is called the '**powerhouse**' of the cell? **(1)**

   a. Mitochondrion
   b. Golgi apparatus

c. ER
d. Nucleus

5. "All cells arise from pre-existing cells" - who stated this? **(1)**

a. Virchow
b. Purkinje
c. Robert Hook
d. Robert Brown

6. Which organelles other than nucleus contain DNA? **(1)**

7. Name two varieties of Indian fishes. **(1)**

8. Which organelle serves as a channel for transport of materials between cytoplasm and nucleus? **(1)**

9. Name two cell organelles, which contain their own genetic material. **(1)**

10. Why is virus an exception of cell theory? **(1)**

11. Why are peroxisomes mostly found in kidney and liver cells? **(3)**
12. What are the functional regions of a cell? **(3)**
13. What is the significance of pores present on the nuclear membrane? **(3)**

14. Which organelle is known as power house of the cell? Why ? **(3)**

15. What is membrane biogenesis? How is plasma membrane formed during this process? **(5)**

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Answers

1. a. Prokaryotic cell

   Explanation: Prokaryotic cells do not have nuclear membrane, and cell organelles are also not well enveloped.

2. a. (a), (c) and (d) are correct

   Explanation: Plasma membrane, protoplasm and nucleus are living matter of a cell. Cell-wall is a non-living part of cell made up of cellulose.

3. c. Both the statements - A and B

   Explanation: Both the statements are correct. Golgi apparatus consists of a system of membrane-bound vesicles. The proteins manufactured by the ribosomes are packed inside the vesicles. Endoplasmic Reticulum (ER) is absent in the red blood cells of mammals. Red Blood Cells in mammals anucleate when mature i.e. they do not contain a nucleus. This is so that the cell has maximum space for haemoglobin.

4. a. Mitochondrion

   Explanation: A **mitochondrion** is known as the "**powerhouse**" of the cell. It is the organelle in the cytoplasm of the cell in which the biochemical processes of respiration and energy production occur. The popular term "**powerhouse of the cell**" was coined by **Philip Siekevitz** in 1957.

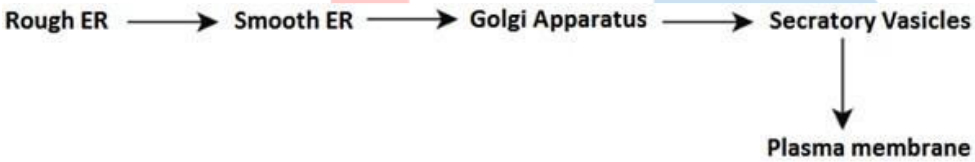
5. a. Virchow

   Explanation: Rudolf Virchow presented the idea in 1855 that every cell arises from another (pre-existing) cell. This was a addition to the cell theory that was proposed earlier by **Matthias Jakob Schleiden** and **Theodor Schwann.**

6. Mitochondria and plasmids contain DNA.
7. Freshwater fish are those that spend some or all of their lives in fresh water, such as rivers and lake. Fresh water fishes– Catla and Rohu

   Marine fishes are those which live in salt water. Marine fishes – Hilsa, Sardine
8. Endoplasmic reticulum
9. Mitochondria and plastids are the two organelles that contain their own genetic

material. Both these organelles have their own DNA and ribosome.

10. Virus do not have any membrane and therefore do not show characteristics of life until and unless they enter a living organism and utilizes their cell machinery to increase their number. So cell theory is not true for virus.
11. Peroxisomes contain various oxidative enzymes which detoxify the toxic material. Since the blood carries various toxic substances to kidney and liver, a large number of peroxisomes are present in them to oxidise the toxic material.
12. There are three major functional regions of cells:
    (i) cell membrane or plasma membrane
    (ii) nucleus
    (iii) cytoplasm
13. The pores present on the nuclear membrane allow transport of water-soluble molecules across the nuclear envelope. RNA and ribosomes move out of the nucleus, whereas carbohydrates, lipids and proteins move into the nucleus.
14. Mitochondria is known as the power house of the cell. Mitochondrion generate the most of the cell's supply of adenosine tri phosphate (ATP). ATP is the source of chemical energy, hence they are called power houses.In addition to supplying cellular energy, mitochondria are involved in cell processes like signaling, cell differentiation and cell death. They also maintain control of the cell cycle.
15. 

    The process of plasma membrane formation is called membrane biogenesis.
    Following organelles are involved in this process:
    The proteins and lipids are first synthesized in the rough endoplasmic reticulum and the smooth endoplasmic reticulum, respectively. These are then transported to the Golgi complex for their modification. After modification, these are transported to the cell surface through vesicles which bud off from Golgi complex to fuse with the cell membrane and form a part of the membrane.