CBSE Test Paper 05

Chapter 05 The Fundamental Unit of Life

1. Match the following with the correct response:

(1) Robert Brown	(A) Nucleus
(2) Purkinje	(B) Cell
(3) Robert Hooke	(C) Protoplasm
(4) Schleiden	(D) Cell theory

   a. 1-B, 2-D, 3-A, 4-C
   b. 1-C, 2-B, 3-D, 4-A
   c. 1-D, 2-A, 3-C, 4-B
   d. 1-A, 2-C, 3-B, 4-D

2. The compounds synthesised near the ER are packaged and dispatched to various sites inside and outside the cell through **(1)**

   a. rough endoplasmic reticulum
   b. Golgi apparatus
   c. plasma membrane
   d. smooth endoplasmic reticulum

3. Which organelle releases energy? **(1)**

   a. Mitochondria
   b. Ribosome
   c. Golgi Apparatus
   d. Chloroplast

4. Genes are located on: **(1)**

   a. Plasma membrane
   b. Chromosomes
   c. Nucleolus

d. Nuclear membrane

5. Which of the following acts as garbage disposal system of the cell? **(1)**

a. Vacuole
b. Lysosome
c. Peroxisome
d. Golgi body

6. Where are proteins synthesized inside the cell? **(1)**

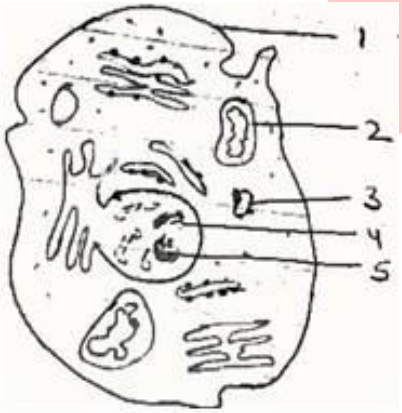
7. Name the two organelles that contain their own genetic material? **(1)**

8. A person takes concentrated solution of salt. After sometime he starts vomiting. What is the phenomenon responsible for such a situation? Explain. **(1)**

9. Which organelle is involved in the formation of lysosomes? **(1)**

10. What is microscope? **(1)**

11. Observe the diagram of the cell below - answer the following questions. **(3)**



i. Label the parts of the cell
ii. what function does part 1 perform?
iii. If the organelle 2 is removed from the cell, what effect is it going to make on the functions of the cell?
iv. Identify, whether it is plant cell or animal cell
v. Which structure is called 'Powerhouse of the cells'?

12. Why are the Golgi bodies found in large numbers in the cells which secrete digestive

enzymes? **(3)**

13. Why are lysosomes called 'suicidal bags? **(3)**

14. What is cell theory? Who formulated it? **(3)**

15. Write the main function of each of the following. **(5)**

a. Plasma membrane
b. cell wall
c. Ribosome
d. Lysosome
e. Nucleolus
f. Endoplasmic reticulum

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Answers

1. d. 1-A, 2-C, 3-B, 4-D

   Explanation: While the nucleic part of the cell had been observed by Leeuwenhoek in 1682, it was Robert Brown who named it the “cell nucleus”. In 1839, Johann Evangelist Purkinje coined the term 'protoplasm' for the fluid substance of a cell. Robert Hooke observed the microscopic structure of the bark of a cork tree and in doing so, discovered and named the cell – the building block of life. The 'Cell theory' was proposed by Matthias Jakob Schleiden and Theodor Schwann.

(1) Robert Brown	(A) named the Nucleus.
(2) Purkinje	(C) coined the term Protoplasm.
(3) Robert Hooke	(B) discovered and named the Cell.
(4) Schleiden	(D) proposed the Cell theory.

2. b. Golgi apparatus

   Explanation: Golgi apparatus is an organelle present in most eukaryotic cells. It is made up of membrane bound sacs and transport molecules from endoplasmic reticulum to different locations

3. a. Mitochondria

   Explanation: Mitochondria iscalled as power house of the cell because it contains enzymes for cellular respiration. During cellular respiration, energy is released which is stored in the form of ATP.

4. b. Chromosomes

   Explanation: Chromosomes are composed of DNA and protein. Functional segments of DNA are called genes. Genes are functional units of heredity that determines the characters of organisms. In a cell which is not dividing, the DNA material is present as part of chromatin material. When a cell is about to divide, the chromatin material gets organised into chromosomes.

5. b. Lysosome

   Explanation: Lysosome is a membrane bound organelle found in nearly all animal cells. They are spherical vesicles which contain hydrolytic enzymes that can break down many kinds of biomolecules. It is also known as suicidal bags or Garbage disposal system as it cleans the degenerating cells inside the body.

6. Protein is synthesized in ribosomes which are usually present on the rough ER.

7. Chloroplast and Mitochondria.

8. Solution of salt is hypertonic solution, so it causes irritation and excessive dehydration in stomach due to exosmosis, which make the person uncomfortable causing reverse movements and thus vomiting.

9. Golgi apparatus

10. Microscope is an optical instrument consisting of a lens or combination of lenses which renders minute objects distinctly visible.

11. a. i. Cell membrane
    ii. Mitochondrion
    iii. RER
    iv. Chromosome
    v. Nucleolus
    b. Selective transport of substances.
    c. Cell becomes energy deficient
    d. Animal cell (cell wall absent)
    e. Mitochondria

12. The main function of Golgi bodies is to release proteins (or enzymes) by vesicles. No other organelle has this property. Therefore, these are largely present in secreting cells.

13. Lysosomes contain digestive enzymes that digest any foreign substance which enters into the cell. If cell is not working properly or become dead, lysosomes burst and digest the cell in which they are present. Hence, they are called ‘suicidal bag’.

14. Cell Theory is one of the basic principles of biology. Credit for the formulation of this

theory is given to German scientists Theodor Schwann, Matthias Schleiden, and Rudolph Virchow.

The Cell Theory states:

i. All living organisms are composed of cells. They may be unicellular or multicellular.
ii. The cell is the basic unit of life.
iii. Cells arise from pre-existing cells. (They are not derived from spontaneous generation.)

15. a. **Plasma membrane –** The cell membrane separates the cell from its external environment, and is selectively permeable (controls what gets in and out). It protects the cell and provides stability. Proteins are found embedded within the plasma membrane, with some extending all the way through in order to transport materials.

b. **Cell wall –** The cell wall is a rigid organelle composed of cellulose and lying just outside the cell membrane. The cell wall gives the plant cell it's box-like shape. it also protects the cell. The cell wall contains pores which allow materials to pass to and from the cell membrane

c. **Ribosome –** Ribosomes are small particles which are found individually in the cytoplasm and also line the membranes of the rough endoplasmic reticulum. Ribosomes produce protein. They could be thought of as "protein factories" of the cell.

d. **Lysosome –** Lysosomes are small sac-like structures surrounded by a single membrane and containing strong digestive enzymes which when released can break down worn out organelles or food. The lysosome is also known as a suicide sac.

e. **Nucleolus –** It synthesizes ribosome

f. Endoplasmic Reticulum – Produces lipids and proteins and also in intracellular transport of substances.