

★ CLASS 9 SCIENCE – CHAPTER 2

IMPORTANT MCQs

Cell: The Building Block of Life

 **New NCERT *Exploration* | 2026–27**

These MCQs are aligned with the **new NCERT Class 9 Science *Exploration* Chapter 2**, covering microscopy, cell structure, cell membrane, osmosis, prokaryotic and eukaryotic cells, organelles, plastids, cell theory, mitosis, meiosis and uncontrolled cell division.

SECTION A — CELL & MICROSCOPY

1. A cell is best described as the:

- A. Smallest unit of matter
- B. Basic structural and functional unit of life
- C. Largest unit of an organism
- D. Non-living component of an organism

 **Answer: B. Basic structural and functional unit of life**

2. Which scientist first observed cells in a thin slice of cork?

- A. Antonie van Leeuwenhoek
- B. Robert Hooke
- C. Schleiden
- D. Schwann

 **Answer: B. Robert Hooke**

Robert Hooke observed small box-like compartments in cork in **1665** and called them “cells”.

3. What is the approximate limit of resolution of the human eye?

- A. 1 mm
- B. 0.1 mm
- C. 0.01 mm
- D. 10 mm

✓ **Answer: B. 0.1 mm**

4. Which instrument is used to magnify objects too small to be seen clearly by the unaided eye?

- A. Thermometer
- B. Microscope
- C. Barometer
- D. Balance

✓ **Answer: B. Microscope**

5. Which microscope uses an electron beam instead of visible light?

- A. Light microscope
- B. Electron microscope
- C. Simple microscope
- D. Hand lens

✓ **Answer: B. Electron microscope**



SECTION B — CELL STRUCTURE

6. Which structure surrounds the contents of every cell and controls movement of substances into and out of it?

- A. Cell wall
- B. Cell membrane
- C. Nucleus
- D. Cytoplasm

✓ **Answer: B. Cell membrane**

The cell membrane is a **selectively permeable** boundary.

7. The cell membrane is also known as the:

- A. Nuclear membrane
- B. Plasma membrane
- C. Cell wall
- D. Cytoplasmic wall

 **Answer: B. Plasma membrane**

8. What does “selectively permeable” mean?

- A. It allows everything to pass through.
- B. It allows only selected substances to pass through.
- C. It prevents all movement.
- D. It allows only water to pass through.

 **Answer: B. It allows only selected substances to pass through.**

9. The jelly-like substance present inside the cell is called:

- A. Nucleus
- B. Cytoplasm
- C. Cell wall
- D. Chromosome

 **Answer: B. Cytoplasm**

10. Which structure contains the genetic material in a typical eukaryotic cell?

- A. Ribosome
- B. Nucleus
- C. Vacuole
- D. Golgi apparatus

 **Answer: B. Nucleus**

11. Which of the following is NOT one of the three basic parts of most cells?

- A. Plasma membrane
- B. Cytoplasm
- C. Nucleus
- D. Cell wall

 **Answer: D. Cell wall**

The chapter identifies the plasma membrane, cytoplasm and prominent nucleus as the three basic parts of most cells.

SECTION C — PLANT & ANIMAL CELLS

12. Which structure provides additional rigidity to a plant cell?

- A. Cell membrane
- B. Cell wall
- C. Nucleus
- D. Ribosome

 **Answer: B. Cell wall**

13. The plant cell wall is mainly made of:

- A. Protein
- B. Cellulose
- C. Fat
- D. Starch

 **Answer: B. Cellulose**

The textbook states that the plant cell wall is primarily made of cellulose.

14. Which structure is generally absent in animal cells but present in plant cells?

- A. Mitochondria
- B. Ribosomes
- C. Cell wall
- D. Cell membrane

 **Answer: C. Cell wall**

15. A mature plant cell generally contains:

- A. No vacuole
- B. One large central vacuole
- C. Only tiny vacuoles
- D. A nuclear vacuole

 **Answer: B. One large central vacuole**

16. The fluid present inside a plant cell vacuole is called:

- A. Cytoplasm
- B. Cell sap
- C. Nucleoplasm
- D. Stroma

 **Answer: B. Cell sap**

17. Which structure gives animal cells greater flexibility in shape?

- A. Rigid cell wall
- B. Flexible cell membrane
- C. Large central vacuole
- D. Chloroplast

 **Answer: B. Flexible cell membrane**

Animal cells do not have a rigid cell wall, allowing them greater flexibility.



SECTION D — PROKARYOTIC & EUKARYOTIC CELLS

18. Which type of cell does not have a well-defined nucleus?

- A. Plant cell
- B. Animal cell
- C. Prokaryotic cell
- D. Eukaryotic cell

 **Answer: C. Prokaryotic cell**

19. In a prokaryotic cell, the genetic material is mainly present in the:

- A. Nucleus
- B. Nucleoid region
- C. Golgi apparatus
- D. Vacuole

 **Answer: B. Nucleoid region**

20. Which of the following is a characteristic of prokaryotic cells?

- A. Membrane-bound nucleus
- B. Many membrane-bound organelles
- C. No well-defined nucleus
- D. Large central vacuole

 **Answer: C. No well-defined nucleus**

21. Plant and animal cells are generally:

- A. Prokaryotic
- B. Eukaryotic
- C. Acellular
- D. Viral

 **Answer: B. Eukaryotic**

Eukaryotic cells have a well-defined nucleus and membrane-bound organelles.

22. Which of the following is absent in a typical bacterial cell?

- A. Cell membrane
- B. Cytoplasm
- C. Ribosomes
- D. Membrane-bound nucleus

 **Answer: D. Membrane-bound nucleus**

23. Which organism is an example of a prokaryote?

- A. Human
- B. Onion
- C. Bacterium
- D. Amoeba

 **Answer: C. Bacterium**



SECTION E — CELL ORGANELLES & THEIR FUNCTIONS

24. Which organelle is mainly associated with energy production through cellular respiration?

- A. Golgi apparatus
- B. Mitochondria
- C. Vacuole
- D. Ribosome

 **Answer: B. Mitochondria**

25. Which organelle is the main site of protein synthesis?

- A. Ribosome
- B. Lysosome
- C. Golgi apparatus
- D. Vacuole

✓ **Answer: A. Ribosome**

26. Which organelle modifies, sorts and packages cellular materials?

- A. Nucleus
- B. Golgi apparatus
- C. Mitochondrion
- D. Ribosome

✓ **Answer: B. Golgi apparatus**

27. Which structure forms a network involved in internal transport and synthesis?

- A. Endoplasmic reticulum
- B. Chloroplast
- C. Lysosome
- D. Vacuole

✓ **Answer: A. Endoplasmic reticulum**

28. Rough endoplasmic reticulum is associated with:

- A. Ribosomes
- B. Chloroplasts
- C. Lysosomes
- D. Vacuoles

✓ **Answer: A. Ribosomes**

29. Smooth endoplasmic reticulum is mainly associated with the synthesis of:

- A. Lipids
- B. DNA
- C. Cellulose only
- D. Chromosomes

✓ **Answer: A. Lipids**

30. Which organelle contains digestive enzymes and helps break down unwanted materials?

- A. Lysosome
- B. Ribosome
- C. Chloroplast
- D. Nucleolus

✓ **Answer: A. Lysosome**

31. Which plastid contains chlorophyll and carries out photosynthesis?

- A. Leucoplast
- B. Chromoplast
- C. Chloroplast
- D. Lysosome

✓ **Answer: C. Chloroplast**

32. Which plastids are associated with bright colours in flowers and fruits?

- A. Chloroplasts
- B. Chromoplasts
- C. Leucoplasts
- D. Ribosomes

✓ **Answer: B. Chromoplasts**

33. Leucoplasts are mainly associated with:

- A. Food storage
- B. Photosynthesis
- C. Colour production
- D. Protein synthesis

✓ **Answer: A. Food storage**

34. Which pair is correctly matched?

- A. Ribosome — Water storage
- B. Mitochondria — Energy release
- C. Vacuole — Protein synthesis
- D. Chloroplast — Intracellular digestion

 **Answer: B. Mitochondria — Energy release**

35. Which pair of organelles contains DNA?

- A. Golgi apparatus and ribosomes
- B. Mitochondria and nucleus
- C. Lysosomes and ribosomes
- D. Vacuoles and Golgi apparatus

 **Answer: B. Mitochondria and nucleus**

The chapter-end exercise specifically tests the presence of DNA in mitochondria and the nucleus.



SECTION F — DIFFUSION & OSMOSIS

36. The movement of water through a selectively permeable membrane is called:

- A. Diffusion
- B. Osmosis
- C. Respiration
- D. Transpiration

 **Answer: B. Osmosis**

37. In the potato experiment, a potato piece placed in plain water generally:

- A. Shrinks
- B. Swells

- C. Remains unchanged
- D. Dissolves

 **Answer: B. Swells**

38. A potato piece placed in a concentrated salt solution generally:

- A. Swells
- B. Shrinks
- C. Produces starch
- D. Divides rapidly

 **Answer: B. Shrinks**

The textbook activity reports swelling in plain water and shrinking in concentrated salt/sugar solution.

39. When water enters a plant cell, the cell becomes:

- A. Flaccid
- B. Turgid
- C. Plasmolysed
- D. Dead

 **Answer: B. Turgid**

40. Loss of water from a plant cell in a concentrated solution may cause:

- A. Plasmolysis
- B. Photosynthesis
- C. Cell division
- D. Respiration

 **Answer: A. Plasmolysis**

41. Why can concentrated salt or sugar help preserve food?

- A. It increases microbial cell growth.
- B. It causes water to move out of microbial cells.
- C. It increases the temperature of food.
- D. It supplies oxygen to microorganisms.

✓ **Answer: B. It causes water to move out of microbial cells.**

This is an application of **osmosis** discussed in the chapter.



SECTION G — CELL THEORY

42. Who stated that all plants are made up of cells?

- A. Theodor Schwann
- B. Matthias Schleiden
- C. Rudolf Virchow
- D. Robert Hooke

✓ **Answer: B. Matthias Schleiden**

43. Who stated that all animals are made up of cells?

- A. Theodor Schwann
- B. Matthias Schleiden
- C. Robert Hooke
- D. Rudolf Virchow

✓ **Answer: A. Theodor Schwann**

44. Who stated that new cells arise from pre-existing cells?

- A. Hooke
- B. Schleiden
- C. Schwann
- D. Virchow

✓ **Answer: D. Rudolf Virchow**

45. Which statement is part of the classical Cell Theory?

- A. All cells arise from pre-existing cells.
- B. Only plants are made of cells.
- C. Cells are non-living structures.
- D. Animals do not contain cells.

✓ **Answer: A. All cells arise from pre-existing cells.**

The textbook gives the three classical statements of Cell Theory.

SECTION H — CELL DIVISION

46. Mitosis generally produces:

- A. Two genetically similar daughter cells
- B. Four cells with half the chromosome number
- C. One daughter cell
- D. Four identical gametes

✓ **Answer: A. Two genetically similar daughter cells**

47. Meiosis produces:

- A. Two diploid cells
- B. Four cells with half the chromosome number
- C. One cell with double chromosomes
- D. Two genetically identical cells only

✓ **Answer: B. Four cells with half the chromosome number**

48. Meiosis is important for the formation of:

- A. Skin cells
- B. Gametes
- C. Red blood cells only
- D. Nerve cells

✓ **Answer: B. Gametes**

49. Which type of cell division maintains the chromosome number?

- A. Mitosis
- B. Meiosis
- C. Fertilisation
- D. Osmosis

 **Answer: A. Mitosis**

50. Which type of cell division reduces the chromosome number by half?

- A. Mitosis
- B. Meiosis
- C. Binary fission
- D. Budding

 **Answer: B. Meiosis**

SECTION I — APPLICATION-BASED MCQs

51. What would happen if all mitochondria were removed from a eukaryotic cell?

- A. Protein synthesis would increase.
- B. Cellular respiration and energy production would be severely affected.
- C. Photosynthesis would begin.
- D. The cell would become prokaryotic.

 **Answer: B. Cellular respiration and energy production would be severely affected.**

52. A boiled potato does not show normal osmosis because boiling:

- A. Increases the number of cells.
- B. Damages the cell membranes.
- C. Produces chlorophyll.
- D. Creates a nucleus.

✓ **Answer: B. Damages the cell membranes.**

53. Why is an empty cup used as a control in the potato-cup experiment?

- A. To increase osmosis
- B. To provide a comparison
- C. To make the potato grow
- D. To destroy the cell membrane

✓ **Answer: B. To provide a comparison.**

54. If proteins are destined to become part of the cell membrane, their pathway is most appropriately:

- A. Nucleus → lysosome → vacuole
- B. Ribosome/RER → Golgi apparatus → vesicles → cell membrane
- C. Chloroplast → nucleus → vacuole
- D. Mitochondria → ribosome → nucleus

✓ **Answer: B. Ribosome/RER → Golgi apparatus → vesicles → cell membrane**

55. What can happen when cell division becomes uncontrolled?

- A. Cells stop functioning permanently.
- B. Tumours may form.
- C. Cells become prokaryotic.
- D. Osmosis stops.

✓ **Answer: B. Tumours may form.**

Uncontrolled cell division can lead to tumour formation.



QUICK ANSWER KEY

Q Ans. Q Ans. Q Ans.

1	B	20	C	39	B
2	B	21	B	40	A
3	B	22	D	41	B
4	B	23	C	42	B
5	B	24	B	43	A
6	B	25	A	44	D
7	B	26	B	45	A
8	B	27	A	46	A
9	B	28	A	47	B
10	B	29	A	48	B
11	D	30	A	49	A
12	B	31	C	50	B
13	B	32	B	51	B
14	C	33	A	52	B
15	B	34	B	53	B
16	B	35	B	54	B
17	B	36	B	55	B
18	C	37	B		
19	B	38	B		

★ HIGH-PRIORITY REVISION

Before the exam, students should especially revise:



Microscopy & resolution



Cell membrane & cell wall



Prokaryotic vs eukaryotic cells



Functions of cell organelles



Plant vs animal cells



Diffusion & osmosis

-  **Cell Theory**
-  **Mitosis vs meiosis**
-  **Uncontrolled cell division & tumours**
-  **ER → Golgi → vesicles → cell membrane pathway**

These are among the chapter's high-priority concepts and are directly reflected in the textbook's chapter-end practice.