

Section A: Cell Theory & History

1. Who first observed cells in 1665 using a self-designed microscope?
 - a) Theodor Schwann
 - b) Matthias Schleiden
 - c) Robert Hooke
 - d) Rudolf Virchow
 2. The cell theory was expanded by Rudolf Virchow in 1855 by stating that:
 - a) All plants are made of cells
 - b) All animals are made of cells
 - c) New cells arise only from pre-existing cells
 - d) Cells have a nucleus
 3. Which of the following is NOT part of the classical cell theory?
 - a) All living organisms are made of one or more cells
 - b) The cell is the basic unit of structure and function
 - c) All cells have a nucleus
 - d) All cells arise from pre-existing cells
 4. Who proposed that all plants are made up of cells?
 - a) Rudolf Virchow
 - b) Matthias Schleiden
 - c) Theodor Schwann
 - d) Robert Hooke
 5. The scientist who proposed that any living plant cell can develop into a complete plant is:
 - a) J. Craig Venter
 - b) Arun Kumar Sharma
 - c) Gottlieb Haberlandt
 - d) Camillo Golgi
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Section B: Microscopy & Cell Size

6. The limit of resolution of the human eye is:
 - a) 0.1 mm
 - b) 0.1 μm
 - c) 1 mm
 - d) 10 μm
7. If the diameter of the visible field is 5 mm and 25 cells are seen along the diameter, the estimated size of one cell is:
 - a) 200 μm
 - b) 200 mm
 - c) 20 μm
 - d) 5000 μm
8. 1 mm is equal to:
 - a) 10 μm
 - b) 100 μm

- c) 1000 μm
 - d) 0.1 μm
9. An electron microscope uses a beam of _____ instead of light.
- a) protons
 - b) neutrons
 - c) electrons
 - d) ions
10. The total magnification of a microscope with 10X eyepiece and 10X objective lens is:
- a) 10X
 - b) 20X
 - c) 100X
 - d) 1000X
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Section C: Cell Membrane & Osmosis

11. The cell membrane is described as selectively permeable because it:
- a) Allows all substances to pass
 - b) Blocks all substances
 - c) Allows some substances to pass while blocking others
 - d) Only allows water to pass
12. When a potato piece is placed in plain water, it swells due to:
- a) Diffusion
 - b) Osmosis
 - c) Active transport
 - d) Evaporation
13. Osmosis is the movement of _____ across a selectively permeable membrane.
- a) solute
 - b) salt
 - c) water
 - d) sugar
14. The fluid-mosaic model describes the structure of:
- a) Cell wall
 - b) Cell membrane
 - c) Nucleus
 - d) Mitochondria
15. Water moves from an area of _____ to an area of _____.
- a) less water, more water
 - b) more solute, less solute
 - c) more water, less water
 - d) less solute, less water
16. When a Rheo leaf peel is placed in 20% sugar solution, the cell contents shrink because:
- a) Water moves into the cell
 - b) Water moves out of the cell
 - c) Sugar moves into the cell
 - d) Sugar moves out of the cell
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Section D: Cell Wall

17. Which of the following organisms have a cell wall?
- a) Animals only
 - b) Plants, fungi, and bacteria
 - c) Animals and plants
 - d) Only bacteria
18. The cell wall is:
- a) Selectively permeable
 - b) Impermeable
 - c) Permeable
 - d) Semi-permeable
19. When a plant cell is placed in a concentrated sugar solution, the cell wall:
- a) Shrinks along with the cell
 - b) Maintains its shape
 - c) Dissolves
 - d) Breaks
20. Human cheek cells shrink in concentrated salt solution because they lack:
- a) Nucleus
 - b) Cell membrane
 - c) Cell wall
 - d) Cytoplasm
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Section E: Nucleus & Genetic Material

21. The nucleus is surrounded by a double-layered covering called:
- a) Nuclear envelope
 - b) Plasma membrane
 - c) Cell wall
 - d) Cytoskeleton
22. The functional segments of DNA are called:
- a) Chromosomes
 - b) Genes
 - c) Chromatin
 - d) Nucleolus
23. In a non-dividing cell, DNA is present as:
- a) Chromosomes
 - b) Chromatids
 - c) Chromatin material
 - d) Nucleoid
24. Mature human Red Blood Cells (RBCs) lack a nucleus to:
- a) Increase lifespan
 - b) Allow more space for hemoglobin
 - c) Enable cell division
 - d) Produce more energy
25. The region containing genetic material in a prokaryotic cell is called:
- a) Nucleus

- b) Nucleolus
 - c) Nucleoid
 - d) Chromatin
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Section F: Cell Organelles – Structure & Function

26. Ribosomes are the sites of:
- a) Lipid synthesis
 - b) Protein synthesis
 - c) ATP production
 - d) Photosynthesis
27. Rough Endoplasmic Reticulum (RER) has _____ attached to its surface.
- a) Ribosomes
 - b) Lysosomes
 - c) Mitochondria
 - d) Golgi bodies
28. The Golgi apparatus is responsible for:
- a) Protein synthesis
 - b) Energy production
 - c) Packaging and shipping of materials
 - d) Waste digestion
29. Lysosomes contain _____ that break down unwanted materials.
- a) Carbohydrates
 - b) Enzymes
 - c) Lipids
 - d) ATP
30. Mitochondria are called the powerhouse of the cell because they:
- a) Store food
 - b) Produce ATP
 - c) Synthesize proteins
 - d) Digest waste
31. The inner membrane of mitochondria has finger-like projections called:
- a) Stroma
 - b) Cristae
 - c) Thylakoids
 - d) Grana
32. Chloroplasts contain a green pigment called:
- a) Carotene
 - b) Xanthophyll
 - c) Chlorophyll
 - d) Anthocyanin
33. Leucoplasts are plastids that:
- a) Contain green pigment
 - b) Store food
 - c) Give colour to flowers
 - d) Produce energy

34. The semi-fluid substance inside the chloroplast is called:
- a) Cristae
 - b) Stroma
 - c) Matrix
 - d) Cytosol
35. Which of the following organelles contains its own DNA?
- a) Ribosome
 - b) Golgi apparatus
 - c) Mitochondria
 - d) Lysosome
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Section G: Vacuoles

36. In a mature plant cell, the large central vacuole is filled with:
- a) Cytoplasm
 - b) Cell sap
 - c) Chlorophyll
 - d) Enzymes
37. When a plant does not get enough water, the vacuole _____, causing the cell to wilt.
- a) Expands
 - b) Loses water
 - c) Divides
 - d) Hardens
38. In animal cells, vacuoles are:
- a) Absent
 - b) Large and permanent
 - c) Small and temporary
 - d) Filled with cell sap
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Section H: Cell Division – Mitosis & Meiosis

39. The process by which new cells are formed from pre-existing cells is called:
- a) Osmosis
 - b) Diffusion
 - c) Cell division
 - d) Metabolism
40. Mitosis produces:
- a) Four genetically identical daughter cells
 - b) Two genetically identical daughter cells
 - c) Four genetically different daughter cells
 - d) Two genetically different daughter cells
41. Meiosis occurs in:
- a) Skin cells
 - b) Reproductive organs

- c) Muscle cells
 - d) Nerve cells
42. Meiosis produces _____ daughter cells.
- a) 2
 - b) 4
 - c) 6
 - d) 8
43. In meiosis, the first division reduces the chromosome number to:
- a) Half
 - b) Double
 - c) Same
 - d) Zero
44. Errors in mitosis can lead to:
- a) Genetic disorders
 - b) Uncontrolled cell division and tumours
 - c) Reduced fertility
 - d) Early pregnancy loss
45. Contact inhibition is a process where:
- a) Cells divide uncontrollably
 - b) Cell division stops when cells contact neighbours
 - c) Cells die immediately
 - d) Cells fuse together
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Section I: Miscellaneous

46. Thermophiles are heat-loving bacteria found in hot springs. They are:
- a) Multicellular
 - b) Unicellular
 - c) Eukaryotic
 - d) Viruses
47. The ability of a single plant cell to develop into a complete plant is called:
- a) Pluripotency
 - b) Totipotency
 - c) Differentiation
 - d) Regeneration
48. Programmed Cell Death (PCD) helps in:
- a) Tumour formation
 - b) Forming fingers during development
 - c) Increasing cell size
 - d) Stopping all cell division
49. Which of the following is absent in animal cells but present in plant cells?
- a) Cell membrane
 - b) Nucleus
 - c) Cell wall
 - d) Ribosome
50. Smooth Endoplasmic Reticulum (SER) is involved in:
- a) Protein synthesis

- b) Lipid and hormone synthesis
- c) Digestion
- d) Photosynthesis

Answer Key

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