

Practice MCQ For Govt Pharmacist Exam, in this article we will solve, Practice MCQ on cellular level of organisation, a topic under Human Anatomy and Physiology first semester. Read following articles for your reference.

[Structure and Function of Cell](#)

[Transport across cell membrane](#)

[Cell Division: Mitosis and Meiosis](#)

[Cell junctions](#)

[General Principles of Cell Communication](#)

- 1. What is the basic structural and functional unit of life?**
 - A) Organ
 - B) Tissue
 - C) Cell
 - D) Organ system

- 2. Which organelle is known as the "powerhouse of the cell"?**
 - A) Nucleus
 - B) Endoplasmic Reticulum
 - C) Golgi Apparatus
 - D) Mitochondria

- 3. The semi-permeable membrane that surrounds the cell is known as:**
 - A) Cell wall
 - B) Cell membrane
 - C) Cytoplasm
 - D) Nuclear envelope

- 4. Which of the following is a component of the cell theory?**
 - A) Cells arise from pre-existing cells
 - B) All living things are made of cells
 - C) Cells are the smallest unit of life
 - D) All of the above

- 5. Ribosomes are the sites of:**
 - A) DNA replication
 - B) Protein synthesis
 - C) Lipid metabolism
 - D) Photosynthesis



6. **Which organelle is responsible for photosynthesis in plant cells?**
- A) Chloroplast
 - B) Mitochondria
 - C) Ribosome
 - D) Lysosome
7. **The control center of the cell that contains genetic material is called:**
- A) Cytoplasm
 - B) Mitochondria
 - C) Nucleus
 - D) Golgi Apparatus
8. **Which of the following is NOT found in animal cells?**
- A) Mitochondria
 - B) Cell wall
 - C) Ribosomes
 - D) Lysosomes
9. **The process of programmed cell death is known as:**
- A) Necrosis
 - B) Apoptosis
 - C) Mitosis
 - D) Cytokinesis
10. **The endoplasmic reticulum is involved in:**
- A) Protein synthesis
 - B) Detoxification
 - C) Energy production
 - D) Both A and B
11. **Which structure is responsible for modifying, sorting, and packaging proteins?**
- A) Lysosome
 - B) Golgi Apparatus
 - C) Nucleus
 - D) Peroxisome
12. **Cilia and flagella are used by cells for:**
- A) Movement
 - B) Protein synthesis
 - C) Cell division
 - D) Energy production

13. **The fluid mosaic model describes the structure of:**
- A) The nucleus
 - B) The cell membrane
 - C) The cytoplasm
 - D) The mitochondria
14. **Which of the following is a function of the cytoskeleton?**
- A) Providing structural support
 - B) Facilitating cell movement
 - C) Organizing the cell's contents
 - D) All of the above
15. **The phase of the cell cycle where the cell grows and performs its normal functions is called:**
- A) Mitosis
 - B) Interphase
 - C) Prophase
 - D) Telophase
16. **Which type of cell lacks a nucleus?**
- A) Eukaryotic cell
 - B) Prokaryotic cell
 - C) Both A and B
 - D) Neither A nor B
17. **The organelle responsible for breaking down worn-out cell parts is the:**
- A) Ribosome
 - B) Lysosome
 - C) Mitochondria
 - D) Endoplasmic Reticulum
18. **Which of the following is a lipid bilayer that forms the outer boundary of the cell?**
- A) Cell wall
 - B) Cell membrane
 - C) Cytoplasm
 - D) Extracellular matrix
19. **Centrioles are most closely associated with:**
- A) Cellular respiration



- B) DNA replication
- C) Cell division
- D) Protein synthesis

20. The jelly-like substance that fills the interior of a cell is called:

- A) Plasma
- B) Cytoplasm
- C) Extracellular fluid
- D) Nucleoplasm

21. Which of the following is NOT a type of transport across the cell membrane?

- a) Active transport
- b) Facilitated diffusion
- c) Osmosis
- d) Cellular respiration

22. The movement of molecules from an area of high concentration to an area of low concentration without the use of cellular energy is called:

- a) Active transport
- b) Facilitated diffusion
- c) Simple diffusion
- d) Endocytosis

23. In facilitated diffusion, molecules move across the membrane with the help of:

- a) Concentration gradients
- b) Channel proteins
- c) ATP hydrolysis
- d) Carrier proteins

24. Osmosis is the diffusion of:

- a) Solutes
- b) Water
- c) Ions
- d) All of the above

25. A cell placed in a hypotonic solution will:

- a) Shrink
- b) Swell
- c) Maintain its shape
- d) Burst

26. The sodium-potassium pump is an example of:

- a) Simple diffusion
- b) Facilitated diffusion
- c) Active transport
- d) Endocytosis

27. Which of the following molecules can freely diffuse across the phospholipid bilayer?

- a) Glucose
- b) Oxygen
- c) Sodium ions
- d) Proteins

28. Phagocytosis is a type of:

- a) Active transport
- b) Facilitated diffusion
- c) Endocytosis
- d) Exocytosis

29. Bulk movement of materials into or out of the cell in enclosed vesicles is called:

- a) Active transport
- b) Facilitated diffusion
- c) Endocytosis
- d) Exocytosis

30. The release of cellular products by exocytosis requires:

- a) Concentration gradients
- b) Channel proteins
- c) ATP hydrolysis
- d) Carrier proteins

31. The cell cycle is a series of events leading to:

- a) Growth and repair
- b) Cell division and growth
- c) Protein synthesis only
- d) Movement only

32. During which phase of the cell cycle does DNA replication occur?

- a) Interphase (G1)
- b) Interphase (S)
- c) Mitosis (Metaphase)
- d) Cytokinesis

33. Mitosis results in the formation of:

- a) Two genetically identical daughter cells
- b) Four genetically different daughter cells
- c) A single, diploid zygote
- d) Haploid gametes

34. In which phase of mitosis do chromosomes condense and become visible?

- a) Prophase
- b) Metaphase
- c) Anaphase
- d) Telophase

35. During metaphase, chromosomes line up single-file at the:

- a) Nuclear envelope
- b) Cell membrane
- c) Midline (equator) of the cell
- d) Centrosomes

36. Sister chromatids are held together at the centromere by proteins called:

- a) Microtubules
- b) Kinesins
- c) Cohesins
- d) Centrioles

37. The separation of sister chromatids during anaphase is triggered by the action of:

- a) Microtubules
- b) Kinesins
- c) Separase enzymes
- d) All of the above

38. Cytokinesis, the division of the cytoplasm, typically occurs:

- a) Simultaneously with mitosis
- b) After mitosis is complete
- c) Before mitosis begins
- d) Not at all, only the nucleus divides

39. Meiosis is a cell division process that results in the formation of:

- a) Two genetically identical daughter cells
- b) Four genetically different daughter cells

- c) A single, diploid zygote
- d) Haploid gametes

40. **Crossing over, a source of genetic variation in meiosis, occurs during:**

- a) Prophase I
- b) Metaphase I
- c) Anaphase I
- d) Telophase II

41. **Which of the following types of cell junctions allows for direct communication between adjacent cells through cytoplasmic channels?**

- a) Tight junctions
- b) Gap junctions
- c) Desmosomes
- d) Hemidesmosomes

42. **Tight junctions primarily function to:**

- a) Allow rapid communication between cells
- b) Anchor cells together and form a barrier
- c) Connect cells to the extracellular matrix
- d) Provide structural support for tissues

43. **Desmosomes, also known as macula adherens, are found in tissues that experience:**

- a) High pressure
- b) Fluid flow
- c) Chemical exchange
- d) Mechanical stress

44. **Hemidesmosomes are specialized junctions that anchor:**

- a) Epithelial cells to each other
- b) Epithelial cells to the basement membrane
- c) Connective tissue cells to each other
- d) Muscle cells to bone

45. **Adherens junctions, including zonula adherens, are formed by interactions between:**

- a) Tightly packed transmembrane proteins
- b) Gap junction channels
- c) Intermediate filaments and cadherins
- d) Integrins and extracellular matrix proteins

46. Which of the following statements about gap junctions is FALSE?
- They allow for the passage of small molecules and ions.
 - They are important for coordinated tissue function.
 - They involve the fusion of cell membranes.
 - They are found in tissues like heart and nervous system.
47. Tight junctions are particularly abundant in the epithelium of organs like:
- Skin
 - Muscle
 - Nervous tissue
 - Blood
48. The disruption of gap junctions can be linked to diseases affecting:
- Skin barrier function
 - Muscle contraction
 - Nerve impulse transmission
 - Bone development
49. Mutations in genes encoding desmosomal proteins can lead to a blistering skin condition called:
- Psoriasis
 - Eczema
 - Pemphigus vulgaris
 - Scleroderma
50. Research suggests that certain types of cell junctions may play a role in:
- Regulating cell migration during development
 - Metastasis of cancer cells
 - Both a and b
 - Neither a nor b
51. In cell communication, a signal molecule that binds to a receptor on a target cell is called a:
- Ligand
 - Receptor
 - Second messenger
 - Target molecule
52. Which of the following is NOT a type of cell signaling?
- Paracrine signaling
 - Endocrine signaling
 - Autocrine signaling
 - Direct contact signaling

53. **Paracrine signaling involves communication between:**
- Cells close together but not in direct contact
 - A cell and itself
 - Distant cells via the bloodstream
 - Cells connected by gap junctions
54. **Endocrine signaling relies on:**
- Hormones released into the bloodstream
 - Local messengers acting on nearby cells
 - Direct cell-to-cell contact
 - Electrical signals
55. **The binding of a ligand to a receptor on the cell surface often triggers a cascade of events inside the cell mediated by:**
- Second messengers
 - Gap junctions
 - Extracellular matrix proteins
 - Carrier molecules
56. **Examples of second messengers commonly used in cell signaling include:**
- Calcium ions (Ca^{2+}) and cyclic AMP (cAMP)
 - Glucose and amino acids
 - Water and electrolytes
 - Oxygen and carbon dioxide
57. **G protein-coupled receptors (GPCRs) are a major class of cell surface receptors that typically:**
- Directly activate enzymes inside the cell
 - Require a second messenger for signal transduction
 - Form ion channels that allow specific ions to pass
 - Are internalized into the cell after ligand binding
58. **In signal transduction pathways, signal amplification refers to:**
- The weakening of the signal as it travels through the cell
 - The conversion of a weak signal into a stronger cellular response
 - The degradation of the signaling molecule after its function
 - The direct transfer of the signal to the nucleus
59. **Phosphorylation of proteins by protein kinases is a common mechanism used in cell signaling for:**
- Altering protein activity



- b) Transporting molecules across the membrane
- c) Breaking down molecules for energy
- d) Building new macromolecules

60. Disruptions in cell signaling pathways can lead to various diseases, including:

- a) Cancer
- b) Diabetes
- c) Autoimmune disorders
- d) All of the above

Answers

1. What is the basic structural and functional unit of life?

Answer: C) Cell

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Answer: D) Mitochondria

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Answer: D) All of the above

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Answer: A) Chloroplast

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Answer: c) Both a and b

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Answer: a) Ligand

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