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# Biology Grade 9 — Chapter 3

The Cell

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*Independent practice MCQs from the supplied Class 9 Biology notes pack. Total: 49 questions.*

## A. Important / Main Topics

**1. Who discovered the cell in 1665?**

(A) Robert Hooke
(B) Camillo Golgi
(C) Robert Brown
(D) Anton van Leeuwenhoek

**Correct Answer: A**

*Explanation: Robert Hooke discovered the cell in 1665 when he examined a thin slice of cork tissue under a compound microscope.*

**2. The cell is considered the:**

(A) Largest unit of life
(B) Basic unit of structure and function of all living organisms
(C) Only unit of reproduction
(D) Smallest organelle

**Correct Answer: B**

*Explanation: The cell is the basic unit of structure and function of all living organisms.*

**3. The cell wall of plants is made up of:**

(A) Chitin
(B) Peptidoglycan
(C) Cellulose
(D) Lignin

**Correct Answer: C**

*Explanation: The cell wall of plants is made up of Cellulose.*

**4. The fluid mosaic model explains the structure of the:**

(A) Nucleus
(B) Cell wall
(C) Ribosome
(D) Cell membrane

**Correct Answer: D**

*Explanation: The structure of the cell membrane is explained according to the fluid mosaic model.*

**5. The site of protein synthesis in the cell is the:**

(A) Ribosome
(B) Lysosome
(C) Smooth endoplasmic reticulum
(D) Golgi body

**Correct Answer: A**

*Explanation: Ribosomes are the site of protein synthesis.*

**6. Which organelle is known as the powerhouse of the cell?**

(A) Chloroplast
(B) Mitochondria
(C) Ribosome
(D) Golgi apparatus

**Correct Answer: B**

*Explanation: Mitochondria produce energy in the form of ATP, that is why they are called the powerhouse of the cell.*

**7. The membrane of the plant vacuole is called the:**

(A) Plasmalemma
(B) Cristae
(C) Tonoplast
(D) Thylakoid

**Correct Answer: C**

*Explanation: The membrane of the plant vacuole is called the tonoplast.*

**8. Which organelle contains its own DNA and ribosomes?**

(A) Golgi apparatus
(B) Lysosome
(C) Ribosome
(D) Mitochondria

**Correct Answer: D**

*Explanation: Mitochondria have their own DNA and ribosomes and can multiply within the cell at their own.*

**9. Centrioles are found in:**

(A) Animal cells
(B) Plant cells only
(C) Bacterial cells
(D) Fungal cells

**Correct Answer: A**

*Explanation: Centrioles are hollow open-ended cylinder-like structures found in animal cells.*

**10. The control centre of the cell is the:**

(A) Cytoplasm
(B) Nucleus
(C) Ribosome
(D) Golgi apparatus

**Correct Answer: B**

*Explanation: The nucleus acts as the control centre of the cell because it contains hereditary material DNA.*

**11. Which of the following is a characteristic of red blood cells?**

(A) They have a large nucleus
(B) They contain many mitochondria
(C) They are biconcave disk-shaped
(D) They are cube-shaped

**Correct Answer: C**

*Explanation: Red blood cells are biconcave disk-shaped, which provides more surface area to absorb and release oxygen.*

**12. The cells responsible for coordination in the animal body are:**

(A) Muscle cells
(B) Liver cells
(C) Red blood cells
(D) Neurons

**Correct Answer: D**

*Explanation: Neurons are the cells of the nervous system and are responsible for coordination in the animal body.*

**13. A group of cells performing the same function is called a:**

(A) Tissue
(B) Organ
(C) Organ system

(D) Organelle

**Correct Answer: A**

*Explanation: A group of cells performing the same function is called a tissue.*

**14. The zygote is described as:**

(A) A fully differentiated cell
(B) A very basic stem cell
(C) A muscle cell
(D) A red blood cell

**Correct Answer: B**

*Explanation: The zygote is the very basic stem cell which has the ability to produce all kinds of cells in an organism.*

**15. Mesophyll cells contain a large number of:**

(A) Mitochondria
(B) Ribosomes
(C) Chloroplasts
(D) Lysosomes

**Correct Answer: C**

*Explanation: Mesophyll cells contain a large number of chloroplasts for photosynthesis.*

**16. Which of the following is NOT a function of the cell membrane?**

(A) Acts as a barrier
(B) Regulates exchange of materials
(C) Maintains a fixed environment inside the cell
(D) Synthesizes proteins

**Correct Answer: D**

*Explanation: Protein synthesis is the function of ribosomes, not the cell membrane.*

**17. Which part of the cell membrane prevents stiffening?**

(A) Cholesterol
(B) Phospholipids
(C) Proteins
(D) Carbohydrates

**Correct Answer: A**

*Explanation: Cholesterol — this correctly answers the question.*

**18. Which organelle is involved in the synthesis of lipids and steroids?**

(A) Rough endoplasmic reticulum
(B) Smooth endoplasmic reticulum
(C) Golgi apparatus
(D) Lysosome

**Correct Answer: B**

*Explanation: Smooth endoplasmic reticulum — this correctly answers the question.*

**19. Which organelle modifies and packages materials into vesicles?**

(A) Ribosome
(B) Mitochondria
(C) Golgi apparatus
(D) Lysosome

**Correct Answer: C**

*Explanation: Golgi apparatus — this correctly answers the question.*

**20. The process by which lysosomes digest unwanted cell organelles is called:**

(A) Phagocytosis
(B) Exocytosis
(C) Osmosis

(D) Autophagy

**Correct Answer: D**

*Explanation: The process by which lysosomes digest unwanted cell organelles is called Autophagy.*

**21. Which of the following is NOT a function of the liver cells?**

(A) Transport of oxygen
(B) Storage of glycogen
(C) Detoxification of toxic substances
(D) Production of clotting proteins

**Correct Answer: A**

*Explanation: Transport of oxygen is a function of red blood cells, not liver cells.*

**22. The average age of red blood cells is:**

(A) 30 days
(B) 120 days
(C) 60 days
(D) 180 days

**Correct Answer: B**

*Explanation: The average age of RBCs is 120 days.*

**23. Which of the following is a modified epidermal cell that regulates the opening and closing of stomata?**

(A) Root hair cell
(B) Mesophyll cell
(C) Guard cell
(D) Neuron

**Correct Answer: C**

*Explanation: Guard cell — this correctly answers the question.*

**24. Which type of muscle cell is found in the heart?**

(A) Skeletal muscle
(B) Smooth muscle
(C) Striated muscle
(D) Cardiac muscle

**Correct Answer: D**

*Explanation: Cardiac muscle cells are found in the heart.*

## B. Less Important / Secondary Topics

**25. During which phase of cell division do centrioles duplicate and move to opposite poles?**

(A) Start of cell division
(B) Interphase
(C) Telophase
(D) Cytokinesis

**Correct Answer: A**

*Explanation: Start of cell division — this correctly answers the question.*

**26. Which of the following is a function of the cytoskeleton?**

(A) Photosynthesis
(B) Providing mechanical support to the cell
(C) Synthesizing proteins
(D) Digesting waste

**Correct Answer: B**

*Explanation: The cytoskeleton provides mechanical support to the cell and is involved in movement.*

**27. Cilia and flagella consist of:**

(A) Nine triplets of microtubules
(B) Actin filaments
(C) Nine pairs of microtubules surrounding a single central pair
(D) Keratin filaments

**Correct Answer: C**

*Explanation: Cilia and flagella consist of nine pairs of microtubules which surround a single central pair of microtubules.*

**28. Which of the following is a function of the nucleus?**

(A) Producing ATP
(B) Synthesizing proteins
(C) Digesting waste
(D) Acting as the control centre of the cell

**Correct Answer: D**

*Explanation: The nucleus acts as the control centre of the cell because it contains hereditary material DNA.*

**29. Which type of plastid is responsible for photosynthesis?**

(A) Chloroplast
(B) Chromoplast
(C) Leucoplast
(D) Tonoplast

**Correct Answer: A**

*Explanation: Chloroplast — this correctly answers the question.*

**30. Chromoplasts are found in:**

(A) Roots and bulbs
(B) Flower petals and ripened fruits
(C) Stems and leaves
(D) Seeds and tubers

**Correct Answer: B**

*Explanation: Chromoplasts are found in flower petals to attract insects and in ripened fruits to attract birds and animals.*

**31. Which of the following is a non-membrane-bound organelle?**

(A) Mitochondria
(B) Lysosome
(C) Ribosome
(D) Golgi apparatus

**Correct Answer: C**

*Explanation: Ribosomes are not bound by any membrane.*

**32. The fluid inside the mitochondrion is called the:**

(A) Stroma
(B) Cristae
(C) Cytoplasm
(D) Matrix

**Correct Answer: D**

*Explanation: The fluid inside the mitochondrion is called the matrix.*

**33. Which of the following is a function of the cell wall in plants?**

(A) Providing support and shape
(B) Synthesizing proteins
(C) Producing ATP
(D) Digesting waste

**Correct Answer: A**

*Explanation: The cell wall supports the structure of individual cells and the plant as a whole. It protects and gives shape to the cell.*

**34. Which of the following is an advantage of animal cells lacking a cell wall?**

(A) They can withstand high osmotic pressure
(B) They are flexible and can move
(C) They can store large volumes of water
(D) They can become turgid

**Correct Answer: B**

*Explanation: Animal cells lack cell walls, which makes them very flexible. Animal cells can move.*

**35. Which of the following cells is responsible for transporting oxygen in the body?**

(A) Muscle cells
(B) Neurons
(C) RBCs
(D) Liver cells

**Correct Answer: C**

*Explanation: RBCs — this correctly answers the question.*

**36. A student observes a cell under the microscope. It has a rigid outer layer, a large central vacuole, and chloroplasts. What type of cell is it?**

(A) Animal cell
(B) Bacterial cell
(C) Fungal cell
(D) Plant cell

**Correct Answer: D**

*Explanation: The presence of a rigid cell wall, a large central vacuole, and chloroplasts are characteristics of plant cells.*

**37. Why do red blood cells lack a nucleus and mitochondria?**

(A) To accommodate more haemoglobin
(B) To help them divide faster
(C) To store more water
(D) To produce more ATP

**Correct Answer: A**

*Explanation: The absence of a nucleus, mitochondria, and endoplasmic reticulum in RBCs helps to accommodate more haemoglobin, which is necessary for oxygen transport.*

**38. A cell is placed in a solution with a higher solute concentration than the cell's cytoplasm. What will happen to the cell?**

(A) It will become turgid
(B) It will shrink and become flaccid
(C) It will burst
(D) Nothing will happen

**Correct Answer: B**

*Explanation: It will shrink and become flaccid — this correctly answers the question.*

**39. Which of the following statements about the cell wall is correct?**

(A) It is present in all eukaryotic cells
(B) It is made of cellulose in fungi
(C) It is absent in animals and animal-like protists
(D) It is made of chitin in plants

**Correct Answer: C**

*Explanation: The cell wall is absent in animals and animal-like protists (protozoa). Algae have cellulose in their cell wall, fungal cell walls are made of chitin, and prokaryotes have peptidoglycan.*

**40. Which of the following organelles is involved in the formation of cilia and flagella?**

(A) Ribosome
(B) Lysosome
(C) Golgi apparatus
(D) Centriole

**Correct Answer: D**

*Explanation: Centrioles are involved in the formation of cilia and flagella.*

**41. A scientist is studying a cell that has a nucleus, mitochondria, and chloroplasts. Which of the following conclusions is most accurate?**

(A) It is a plant cell
(B) It is an animal cell
(C) It is a bacterial cell
(D) It is a fungal cell

**Correct Answer: A**

*Explanation: It is a plant cell — this correctly answers the question.*

**42. Which of the following statements about the fluid mosaic model is correct?**

(A) Proteins form a rigid layer on the outside of the membrane
(B) Phospholipids form a double layer with proteins embedded in a mosaic fashion
(C) The membrane is composed entirely of proteins
(D) The membrane is composed entirely of carbohydrates

**Correct Answer: B**

*Explanation: The fluid mosaic model postulates that the cell membrane consists of a double layer of phospholipids in which proteins are incorporated in a mosaic fashion.*

**43. Which of the following best explains why plant cells can become turgid while animal cells cannot?**

(A) Plant cells have a nucleus; animal cells do not
(B) Plant cells have chloroplasts; animal cells do not
(C) Plant cells have a rigid cell wall; animal cells lack a cell wall
(D) Plant cells have mitochondria; animal cells do not

**Correct Answer: C**

*Explanation: Plant cells can become turgid due to the presence of a cell wall, which allows plant parts to maintain structure and stay upright. Animal cells lack a cell wall and cannot become turgid.*

**44. Which of the following is a function of the Golgi apparatus?**

(A) Producing ATP
(B) Synthesizing proteins
(C) Digesting waste
(D) Modifying and packaging materials into vesicles

**Correct Answer: D**

*Explanation: Modifying and packaging materials into vesicles — this correctly answers the question.*

**45. Which of the following organelles is involved in the synthesis of proteins?**

(A) Ribosome
(B) Lysosome
(C) Chloroplast
(D) Vacuole

**Correct Answer: A**

*Explanation: Ribosomes are the site of protein synthesis.*

**46. Which of the following statements about stem cells is correct?**

(A) They are fully differentiated cells
(B) They are unspecialized and can differentiate into other cell types
(C) They can only produce one type of cell

(D) They are found only in plants

**Correct Answer: B**

*Explanation: Stem cells are unspecialized and have the ability to divide and differentiate into various specialized cell types.*

**47. Which of the following is a function of the vacuole in plant cells?**

(A) Synthesizing proteins
(B) Producing ATP
(C) Maintaining turgor pressure
(D) Digesting waste

**Correct Answer: C**

*Explanation: The primary role of the central vacuole in a plant cell is to maintain turgor pressure within the plant cell.*

**48. Which of the following correctly matches an organelle with its function?**

(A) Mitochondria — protein synthesis
(B) Ribosome — ATP production
(C) Golgi apparatus — photosynthesis
(D) Lysosome — intracellular digestion

**Correct Answer: D**

*Explanation: Lysosomes contain digestive enzymes and are involved in intracellular digestion and autophagy.*

**49. Which of the following statements about the cell membrane is correct?**

(A) It is semipermeable, allowing some molecules to move across but not others
(B) It is permeable to all substances
(C) It is completely impermeable
(D) It is made entirely of proteins

**Correct Answer: A**

*Explanation: The cell membrane is semipermeable, so some molecules can move across the lipid bilayer but others are blocked. It regulates the exchange of materials between the cell and its environment. Answer.*