

INTERNATIONAL INDIAN SCHOOL, DAMMAM

CLASS - 9 QUESTION BANK FOR MID-TERM EXAM

FROM PREVIOUS YEARS QUESTION PAPERS

SCIENCE (2023 – 24)

BIOLOGY: THE FUNDAMENTAL UNIT OF LIFE

I. CHOOSE THE CORRECT ANSWER

1. Cell arise from pre-existing cells was stated by _____
 - a. Haeckel
 - b. Virchow
 - c.Hooke
 - d. Scheliden
2. Cell theory was given by _____
 - a. Schleiden and Schwann
 - b. Virchow
 - c. Hooke
 - d. Haeckel
3. Living cells were discovered by _____
 - a. Robert Hooke
 - b. Purkinjee
 - c. Leeuwenhoek
 - d. Robert Brown
4. The basic structural and functional unit of all living organisms is known as _____
 - a. Organ
 - b. Tissue
 - c. Cell
 - d. Proteins
5. Gaseous exchange in cells take place by _____
 - a. Osmosis
 - b. Endocytosis
 - c.Diffusion
 - d. Excocytosis
6. An unripe green fruit changes colour when it ripens. The reason being:
 - a. Chromoplasts changes to chlorophyll
 - b. Chromoplasts changes to chromosomes
 - c. Chromosomes changes to chromoplasts
 - d. Chloroplast changes to chromoplasts
7. _____ is called the energy currency of the cell
 - a. Endoplasmic reticulum
 - b. Oxygen
 - c. ATP
 - d. Mitochondria
8. What is the important function of chloroplast?
 - a. Photosynthesis
 - b. Cellular reproduction
 - c. Lipid synthesis
 - d. Protein synthesis
9. Which structure in plant cell is responsible for providing the energy required to drive cellular processes?
 - a. Chloroplast
 - b. Mitochondrion
 - c. Nucleus
 - d. Golgi apparatus
10. Root hairs absorb water from soil by the process of
 - a. plasmolysis
 - b. diffusion
 - c. osmosis
 - d. endocytosis
11. A plant cell placed in a hypo-tonic solution will not burst because of presence of
 - a. plasma membrane
 - b. cell wall
 - c. chloroplast
 - d. cytoplasm
12. Besides nucleus, DNA is also present in
 - a. ribosome's and Golgi apparatus
 - b. mitochondria and chloroplasts
 - c. lysosomes and endoplasmic reticulum
 - d. Golgi complex and mitochondria
13. Plasma membrane is composed of
 - a. cellulose and lipids
 - b. lipids and proteins
 - c. peptidoglycan and lipids
 - d. cellulose and proteins

14. An organism has poorly defined nuclear membrane in its cells. This organism could be a/an
a. bacteria b. animal c. fungi d. bird
15. Chromosomes are composed of
a. DNA and protein b. DNA and sugar c. sugar and protein d. chromatin

II. ASSERTION AND REASONING

DIRECTION: In the following questions, a statement of assertion (A) is followed by a statement of reason (R). Mark the correct choice as:

- (a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).
(b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).
(c) Assertion (A) is true but reason (R) is false.
(d) Assertion (A) is false but reason (R) is true.
1. **Assertion:** A cell swells up when present in a hypotonic solution.
Reason: More water molecules enter the cell than they leave.
2. **Assertion-** The shape and size of cells are directly related to the size of the organism.
Reason- Larger the organism, larger is the cells
3. **Assertion-** The cells of the onion peel all look the same, irrespective of the size of the onion.
Reason- All the cells of a multicellular organism look the same.
4. **Assertion-** Some cells like Amoeba having changing shapes.
Reason- Amoeba is a unicellular organism.
5. **Assertion-** Robert Hooke (1665) discovered cells in thin slice of cork.
Reason- He named them cells as they appeared like small chambers.
6. **Assertion-** Metabolic gases diffuse freely across plasma membrane.
Reason- Plasma membrane is permeable to these gases.
7. **Assertion:** Mitochondria and chloroplasts are semiautonomous organelles.
Reason: They are formed by division of pre-existing organelles and contain DNA but lack protein synthesizing machinery.

III. ANSWER THE FOLLOWING

1. Differentiate between diffusion and osmosis.
2. What happens to a cell when it is placed in hypotonic, isotonic and hypertonic solutions respectively?
3. Classify organisms on the basis of number of cells. Give two examples each.
4. Can a single cell independently live its own? Explain giving example.
5. Distinguish between hypotonic, isotonic and hypertonic solutions.
6. What would happen if plasma membrane ruptures or breaks down?
7. Who discovered cell and how?
8. Why is the cell called the structural and functional unit of life?
9. How do substance like carbon dioxide and water move in and out of the cell? Explain

10. What is the significance of:
 - a. presence of SER in liver cells?
 - b. presence of ribosomes on RER?
11. Describe the role played by the lysosomes. Why these are termed as suicidal bags?
12. State the reason for the following:
 - a. Mitochondria are known as powerhouse of cell.
 - b. plastids are able to make their own proteins
13. Draw animal cell structure and label the cell organelles which are common in plant and animal cell and write their functions.
14. Define cell division. Write the differences between mitosis and meiosis.
15. Read the given passage and answer the following questions.

IV. CASE STUDY

Plant cells, in addition to the plasma membrane, have another rigid outer covering called the cell wall. The cell wall lies outside the plasma membrane. The plant cell wall is mainly composed of cellulose. Cellulose is a complex substance and provides structural strength to plants. When a living plant cell loses water through osmosis there is shrinkage or contraction of the contents of the cell away from the cell wall. This phenomenon is known as plasmolysis.

(1) Which of the following is the main constituent of cell wall?

- (a) Proteins (b) Lipids (c) Lipoproteins (d) Cellulose

(2) Which of the following is outer most covering of the plant cell?

- (a) Cell membrane (b) Plasma membrane (c) Cell wall (d) Cellulose

(3) Choose the correct set of statements from the following.

Statement 1 – Cell wall lies outside the plasma membrane.

Statement 2 – Cell wall is mainly composed of cellulose.

Statement 3 – Cellulose is a complex substance and provides structural strength to plants.

- (a) Statement 1 & 3 (b) Statement 1 & 2 (c) All statement are correct

(4) What is mean by plasmolysis?

(5) What is the reason behind structural strength of plant cell?

BIOLOGY - TISSUES

1. _____ is not found in xylem tissues.
 - a. Sieve tubes
 - b. Xylem parenchyma
 - c. Tracheids
 - d. Vessels
2. The cells of cork are dead and have a chemical in their walls that makes them impervious to gases and water. The chemical is
 - a. Lignin
 - b. Suberin
 - c. Cutin
 - d. Pectin
3. The flexibility in plants is due to a tissue called
 - a. Chlorenchyma
 - b. parenchyma
 - c. sclerenchyma
 - d. collenchyma
4. What is chlorenchyma?
 - a. It is a simple permanent tissue
 - b. It is a parenchymatic tissue of green leaves and stems
 - c. It is a photosynthetic in nature
 - d. All of the above
5. There are specific regions of plant body that constantly remain in the state of division. What are they?
 - a. Epidermis
 - b. Xylem
 - c. Meristem
 - d. Cork
6. In desert plants, rate of water loss gets reduced due to the presence of
 - a. Cuticle
 - b. Stomata
 - c. Lignin
 - d. Suberin
7. Which of the following helps in increasing the width and the girth of the plants?
 - a. Apical meristem
 - b. Lateral meristem
 - c. Intercalary
 - d. Permanent tissue
8. Cell walls of sclerenchyma are rich in
 - a. cellulose
 - b. pectin
 - c. lignin
 - d. cutin
9. _____ have tubular cells with perforated walls and are living in nature.
 - a. Tracheids
 - b. vessels
 - c. xylem fibres
 - d. sieve tubes.
10. Identify the tissue that is present in leaf stalks below the epidermis.
 - a. Collenchyma
 - b. Sclerenchyma
 - c. Parenchyma
 - d. Xylem

II. ASSERTION AND REASONING

DIRECTION: In the following questions, a statement of assertion (A) is followed by a statement of reason (R). Mark the correct choice as:

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 - (d) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).
 - (c) Assertion (A) is true but reason (R) is false.
 - (d) Assertion (A) is false but reason (R) is true.
1. **Assertion:** Vessel and sieve tube both are meant for transport purposes.
Reason: Vessels are lignified.
 2. **Assertion:** Parenchyma cells help in storage of food.
Reason: Parenchyma cells are the main seats of photosynthesis.
 3. **Assertion:** Permanent tissue is composed of mature cells.

Reason: Meristematic tissue is a group of actively dividing cells.

4. **Assertion :** Meristematic tissues constitute the major portion of the plant body.

Reason : Meristematic tissues consist of differentiated cells.

5. **Assertion :** Most of plant tissues are dead.

Reason : Due to sedentary existence of plants, dead cells provide mechanical strength more easily than live ones and need less maintenance.

III. ANSWER THE FOLLOWING

1. Which plant tissue will you associate with the conduction of food in plants? Write its 4 components.
2. List the constituents of xylem .What would happen if the xylem of root of a plant is blocked?
3. How is the outer layer of a branch of a tree different from the outer layer of a young stem?
4. Differences between meristematic tissue and permanent tissue.
5. Differentiate between parenchyma, collenchyma and sclerenchyma on the basis of their cell wall.
6. What are the meristems depending upon location and mention their functions with the help of a neat labelled diagram.
7. Give reasons:
 1. Branches of a tree move and bend freely in high wind velocity.
 2. It is difficult to pull out the husk of coconut.
 3. Aquatic plants float on water.
8. While observing a slide of dicot leaf, how did you recognize the stomata and accessory Cells? Write the functions of stomata.

IV. CASE STUDY

Read the given passage and answer the following questions.

The outermost layer of the cells is called epidermis. The epidermis is made up of a single layer of cells. In some plants living in dry habitats, epidermis may be thicker since protection against water loss is critical. The entire surface of a plant has an outer covering of epidermis. Epidermal cells on the aerial parts of the plant often secrete a waxy, water-resistant layer on the outer surface. That aids protection against water, mechanical injury and invasion by parasitic fungi. Since, it has a protective role to play, cells of the epidermal tissue form a continuous intercellular spaces. Most epidermal cells are relatively flat. Often their outer and side walls are thicker than the inner wall.

1. Walls of the epidermal cells contain
 - a. Chloroplast
 - b. Chlorophyll
 - c. Cutin
 - d. Lignin
2. Which of the following is not a function performed by epidermis?
 - a. Protection against mechanical injury
 - b. Protection against insects
 - b. Protection against water loss
 - d. Regulation of gaseous exchange
3. In desert plants, how does the rate of loss of water get reduced?