

DAYANAND ANGLO VEDIC PUBLIC SCHOOL, AIROLI

(2024-25)

STD-IX

SUBJECT- BIOLOGY

TOPIC- TISSUES (PLANT TISSUES)

**I. MULTIPLE CHOICE QUESTIONS:**

- Rapid elongation of a bamboo stem is due to
  - Lateral meristem
  - Intercalary meristem
  - Apical meristem
  - Cambium
- \_\_\_\_\_ is not found in xylem tissues.
  - Sieve tubes
  - Xylem parenchyma
  - Tracheid
  - Vessels
- The flexibility in plants is due to a tissue called
  - chlorenchyma
  - parenchyma
  - sclerenchyma
  - collenchyma
- The cells of cork are dead and have a chemical in their walls that makes them impervious to gases and water. The chemical is
  - lignin
  - suberin
  - cutin
  - wax
- Sieve tubes and companion cells are present in
  - xylem
  - phloem
  - cork
  - cambium

Directions: In each of the following questions, a statement of Assertion is given and a corresponding statement of Reason is given just below it. Of the statements, given below, mark the correct answer as:

- Both assertion and reason are true and reason is the correct explanation of assertion.
  - Both assertion and reason are true but reason is not the correct explanation of assertion.
  - Assertion is true but reason is false.
  - Both Assertion and Reason are false.
- Assertion: Parenchyma cells help in storage of food.  
Reason: Parenchyma cells are the main seats of photosynthesis.
  - 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.
  - Assertion: Vessel and sieve tube both are meant for transport purposes.  
Reason: Vessels are lignified.
  - Assertion. Collenchyma is unevenly thickened walled tissue.  
Reason. Collenchyma is thickened due to deposition of pectin.
  - Assertion: A simple tissue is made of only one type of cells. Reason: Various simple tissues in plants are parenchyma, collenchyma and sclerenchyma.

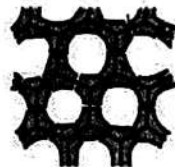
## II. ANSWER THE FOLLOWING QUESTIONS.

1. How are simple tissues different from complex tissues in plants?
2. If a potted plant is covered with a glass jar, water vapours appear on the wall of glass jar. Explain why?
3. Name the different components of xylem and draw a living component?
4. Water hyacinth float on water surface. Explain.
5. Which structure protects the plant body against the invasion of parasites?
6. Give reasons for
  - (a) Meristematic cells have a prominent nucleus and dense cytoplasm, but they lack vacuole.
  - (b) Intercellular spaces are absent in sclerenchymatous tissues.
  - (c) We get a crunchy and granular feeling, when we chew pear fruit.
  - (d) Branches of a tree move and bend freely in high wind velocity.
  - (e) It is difficult to pull out the husk of a coconut tree.
7. List the characteristics of cork. How are they formed? Mention their role.
8. (a) Differentiate between meristematic and permanent tissues in plants  
(b) Define the process of differentiation.
9. Why is the epidermis present as a thick waxy coating of cutin in desert plants?
10. Identify the following diagram and write one function of each.

(a)



(b)



(c)



### CASE BASE QUESTIONS:

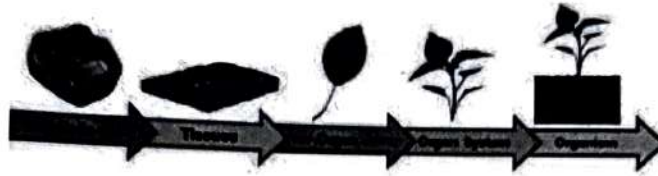
1. The growth of plants occurs only in certain specific regions. This is because the dividing tissue, also known as meristematic tissue, is located only at these points. Depending on the region where they are present, meristematic tissues are classified as apical, lateral and intercalary. New cells produced by meristem are initially like those of meristem itself, but as they grow and mature, their characteristics slowly change, and they become differentiated as components of other tissues.

- a. Which meristem helps in increasing the girth of the plant?
- b. Why does the sugarcane plant continue to grow in length even after its tip is removed?
- c. Write any two characteristics of meristematic tissues.

OR

- c. Describe the structure and function of guard cells.

2. A few layers of cells beneath the epidermis are generally simple permanent tissue. Parenchyma is the most common simple permanent tissue. It consists of relatively unspecialized cells with thin cell walls. They are living cells. Collenchyma allows bending of various parts of the plant-like tendrils and stems of climbers without breaking. Sclerenchyma tissue makes the plant hard and stiff. We have seen the husk of a coconut. It is made of sclerenchymatous tissue. They are long and narrow as the walls are thickened due to lignin. The tissue is present in stems, around vascular bundles, in the veins of leaves and in the hard covering of seeds and nuts.



- a. Why are the xylem and phloem called complex tissues?
- b. What is the significance of collenchyma tissue in plants?
- c. What are the main differences between parenchyma and sclerenchyma tissues?

OR

- c. Explain the role of cambium in the growth of plants.

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**I. MULTIPLE CHOICE QUESTIONS:**

1. Organisms lacking nucleus and membrane bound organelles are:  
(a) Diploids                      (b) Prokaryotes                      (c) Haploids                      (d) Eukaryotes
2. Chromosomes are formed of-  
(a) DNA only                      (b) Protein only                      (c) DNA and protein                      (d) RNA only
3. Cell arises from pre-existing cell was stated by  
(a) Haeckel                      (b) Virchow                      (c) Hooke                      (d) Schleiden
4. A person with swollen gums rinses his mouth with lukewarm salt water and swelling of his gums decreases. This is because-  
(a) The gums absorb the saltwater solution.  
(b) The saltwater solution lowers the temperature of the water in the gums.  
(c) The salt in the solution moves against the concentration gradient.  
(d) The water in the gums moves out due to high concentration of salt in the solution.

**II. ASSERTION/REASON TYPE:**

**Directions:** 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-** The cell membrane is a dead part of the cell.

**REASON-**It regulates the movement of materials between the inner and the outer environment.

2. **ASSERTION-**The cell will shrink when it experiences hypertonic solution.

**REASON-**Concentration of water is more inside the cell rather than outside, hence the water molecule travelled from inside to out results cell became shrink.

3. **ASSERTION-**Nucleus plays central role in cellular functions.

**REASON-**Nucleus contain chromosomes which is rod like structures.

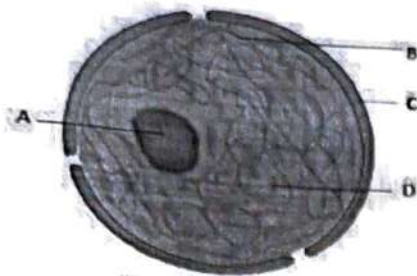
4. **ASSERTION-** Chromosomes contain information for inheritance of characters from parents to next generation.

**REASON-** Chromosomes are composed of DNA and protein.

5. **ASSERTION:** Prokaryotic cells are larger than Eukaryotic cells.

**REASON:** Prokaryotic cells lack cytoplasmic cell organelles.

III. BASED ON DIAGRAM AND YOUR KNOWLEDGE, ANSWER THE FOLLOWING QUESTIONS -



Structure of Nucleus

- Label the parts A, B, C and D
- Mention one function of C.

IV. DEFINE THE FOLLOWING TERMS.

- Plasmolysis
- Endocytosis
- Membrane Biogenesis

V. ANSWER THE FOLLOWING QUESTIONS:

- De-shelled egg shrinks when placed in highly concentrated salt solution. Give reason.
- Ritika observed onion peel cells in the lab and could view the cell wall, cytoplasm and nucleus clearly. Suddenly her friend spilled a few drops of salty water on the slide having onion peel cells. She observes some changes in the cells after some time.
  - What changes would have been observed by Ritika?
  - Name the process that caused the changes in the cells.
  - Would there be similar changes observed if she had prepared a slide of cheek cells?
- If you are provided with some vegetables to cook, you generally add salt into the vegetables during the cooking process.
  - What happens to the vegetables after adding salt?
  - Which mechanism is responsible for the changes? Explain.

VI. CBQ TYPE

Cell is the smallest structural and functional unit of life. It is called structural unit as all living organisms are made up of cells and functional unit as it is the smallest structure capable of performing basic life processes. Two postulates of the cell theory are-

- All organisms are made up of cells.
- All cells exist from pre-existing cells.

Each cell has got certain basic components within it known as cell organelles. Each kind of cell organelle performs a special function that is why a cell is able to live and perform all its function in any organism. These organelles are suspended in the cytoplasm.

- A unicellular algae put in distilled water does not burst whereas an Amoeba would burst. Why?
- Who presented the cell theory? What does the cell theory state?
- What is the difference between cell membrane and cell wall?

OR

- List two distinguishing features between prokaryotic cells and Eukaryotic cells in terms of  
(i) number of chromosomes in the cell  
(ii) nuclear region.