Fundamental Unit of Life and Plant Tissues

Marks: 50 Time: 60 minutes

Section A: Multiple Choice Questions (1 mark each)

1. The cell wall in plant cells is mainly composed of:
   a) Lipids
   b) Proteins
   c) Cellulose
   d) Starch
2. Which organelle is responsible for cellular respiration?
   a) Mitochondria
   b) Chloroplast
   c) Nucleus
   d) Ribosome
3. The movement of water molecules through a selectively permeable membrane is called:
   a) Diffusion
   b) Osmosis
   c) Active transport
   d) Endocytosis
4. Which of the following tissues is responsible for protection against dessication and attack of parasitic fungi in plants?
   a) Sclerenchyma tissue
   b) Epidermis tissue
   c) Parenchyma tissue
   d) Cork tissue
5. Ribosomes are the site of:
   a) Respiration
   b) Photosynthesis
   c) Protein synthesis
   d) Lipid storage
6. Which of the following is found in prokaryotic cells but not in eukaryotic cells?
   a) Mitochondria
   b) Ribosome
   c) Nucleoid
   d) Golgi bodies
7. Collenchyma cells provide:
   a) Protection
   b) Flexibility
   c) Support
   d) Transport

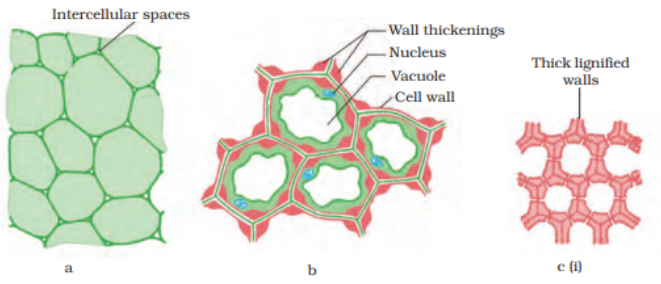
8. Which part of the cell is known as the 'suicidal bag'?
   a) Lysosome
   b) Ribosome
   c) Golgi body
   d) Mitochondria
9. Vacuoles are larger in:
   a) Animal cells
   b) Plant cells
   c) Both are equal
   d) Bacteria
10. What helps to maintain turgor pressure in plant cells?
   a) Cell membrane
   b) Cell wall
   c) Nucleus
   d) Vacuole

Section B: Assertion-Reasoning Questions (1 mark each)
Instructions:
   a) Both A and R are true, and R is the correct explanation of A
   b) Both A and R are true, but R is not the correct explanation of A
   c) A is true, but R is false
   d) Both A and R are false

11. Assertion: Nucleus is the control center of the cell.
   Reason: It contains chromosomes which are made up of DNA.
12. Assertion: Phloem transports water in plants.
   Reason: Phloem has sclereids and comapanion cells for conduction
13. Assertion: Large air cavities are present in parenchyma of lotus plants to help them float
   Reason: Such a parenchyma type is called Clorenchyma.
14. . Assertion: Glycerin is used to prepare slides for observing under a microscope
   Reason: Glycerin is isotonic with plant cells in nature
15. Assertion: Cork is present in the bark of older branches
   Reason: Cork has a deposition of Suberin

Section C: Short Answer Questions (2 marks each)

16. What are the differences between bacterial cell and liver cells?
17. Differentiate between chromatin and chromosomes.
18. Observe a, b, c and answer the questions.



(i) Which of the figures, a b or c shows collenchyma? Give reason.

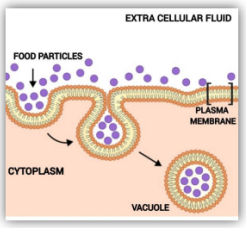
(ii) Which of these is present in the husk of coconut? Name it.

a b c

19. Name the following:

(i) Scientist who further expanded the cell-theory by stating that all cells arise from pre-existing cells.

(ii) The process depicted in the given diagram that helps Amoeba acquire its food.



(iii) The plastid that gives colour to petals

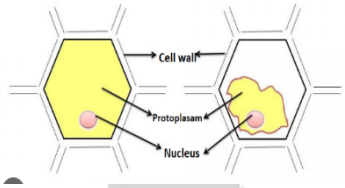
(iv) what is the function of nucleolus?

Section D: Short Answer Questions (3 marks each)

20. Write two similarities and one dissimilarity between mitochondria and plastid.

21. Describe the structure and function of meristematic tissue. Draw a diagram to show their location. Name the type of Meristem responsible for increase in girth/thickness of the stem or root.

22. A plant cell placed in a hypertonic solution.



A B

Figure B shows the state of the cell after a few hours. Identify and explain the phenomenon resposnsible. How can we reverse it?

Section E: (4 marks each)

23. Take four peeled potato halves and scoos each one out to make potato cups. One of these potato cups should be made from a boiled potato. Put each potato cup in a trough containing water.

Now,

(a) Keep cup A empty

(b) Put one teaspoon sugar in cup B

(c) Put one teaspoon salt in cup C

(d) Put one teaspoon sugar in the boiled potato cup D.

Keep these for two hours. Then observe the four potato cups and answer the following:

(i) Explain why water gathers in the hollowed portion of B and C.

(ii) Why is potato A necessary for this experiment?

(iii) Explain why water does not gather in the hollowed out portions of A and D.

24. Give reasons why-

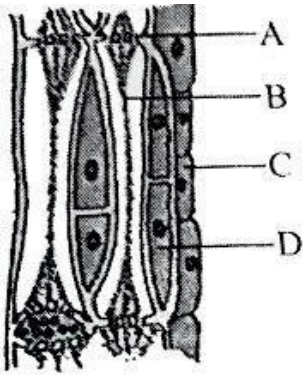
a. RER and SER are necessary for membrane biogenesis
b. Parenchyma is the most abundant tissue in green plants
c. Epidermis has a layer of cuticle in desert plants

d. Tracheids and vessels are thick walled and vertically arranged

Section F: (5 marks each)

25. a) Explain the differences between mitosis and meiosis.
b) Why do cells divide?
c) Which organelle is involved in cell division? Why? (3+1+1)

26. Observe the tissue shown in the picture provided below-



a) Identify the tissue. What is the function of this tissue? (2 marks)

b) Where is it found? (1 marks)

c) Name its components (2 mark)