SATISH SCIENCE ACADEMY

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TISSUES

Class 09 - Science

Time Allowed: 3 hours **Maximum Marks: 195**

Section A

1. **Assertion (A):** Dendrite is a single, long cylindrical process which forms fine branches terminally. **[1]**
Reason (R): It consists of short processes arising from the cyton.

   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) A is false but R is true.

2. **Assertion (A):** A nail is inserted in the trunk of a tree at a height of 1 metre from the ground level. After 3 years, the nail is still present there. **[1]**
Reason (R): The girth of the stem or root increases due to apical meristem (cambium).

   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) A is false but R is true.

3. **Assertion (A):** Parenchyma tissue consists of relatively unspecialized cells with thin cell walls and is usually loosely packed. **[1]**
Reason (R): They do not have spaces between them.

   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) A is false but R is true.

4. **Assertion (A):** Meristematic tissues are growth tissues and found in the growing regions of the plant. **[1]**
Reason (R): According to the position of meristematic tissues they are of three types.

   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) A is false but R is true.

5. **Assertion (A):** Ciliated epithelium helps in the movement of particles. **[1]**
Reason (R): Cilia help in movement.

   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) A is false but R is true.

6. **Assertion (A):** Epithelial tissue form the lining of the mouth and alimentary canal and protect these organs. **[1]**
Reason (R): They help in the absorption of water and nutrients.

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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) A is false but R is true.

7. **Assertion (A):** Epidermal cells on the aerial parts of the plant often secrete a waxy, water-resistant layer on their outer surface. **[1]**

Reason (R): This aids in protection against loss of water, mechanical injury, and invasion by parasitic fungi.

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) A is false but R is true.

8. **Assertion (A):** Cells of cork or bark are dead, acts as a protective covering. **[1]**

Reason (R): In leguminous plants, the root nodules harbor nitrogen-fixing bacteria which convert atmospheric nitrogen into nitrates.

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) A is false but R is true.

9. **Assertion (A):** Animals of colder regions and fishes of cold water have a thicker layer of subcutaneous fat. **[1]**

Reason (R): The thick layer of subcutaneous fat acts as an insulator and prevents the heat of the body to escape out. The layer of fat acts as subcutaneous insulation of body for thermoregulation.

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) A is false but R is true.

10. **Assertion (A):** Surface of skin is impervious to water. **[1]**

Reason (R): Surface of skin is covered by stratified cuboidal epithelium.

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) A is false but R is true.

11. What are vascular bundles? **[1]**
12. Whom do we call "islands in the sea of death" ? **[1]**
13. What does a neuron look-like? **[1]**
14. Name the muscle of heart. **[1]**
15. Which structure protects the plant body against the invasion of parasites? **[1]**
16. Meristematic cells have a prominent nucleus and dense cytoplasm but they lack vacuole. Give reason? **[1]**
17. What is the main function of blood platelets? **[1]**
18. Which tissue in plants provides them flexibility? **[1]**
19. Which type of epithelium is present in the organs where exchange of substances takes place? **[1]**
20. Which tissue makes up the husk of coconut? **[1]**
21. What is the specific function of cardiac muscle? **[1]**
22. What are the constituents of phloem? **[1]**
23. Name the two main types of plant tissues. **[1]**

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24. Which animal tissue helps in repair of tissue and fills the space inside the organ? **[1]**

25. What does a neuron look like? **[1]**

26. Walls of sclerenchymatous cells are thickened due to which reason? **[1]**

27. Which tissue is commonly known as "Packaging tissue" ? **[1]**

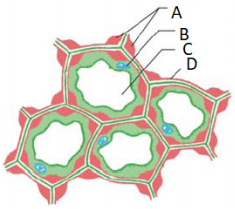
28. Which tissue protects the entire body? **[1]**

29. What are the functions of tendon and ligament? **[1]**

30. What minerals is the bone matrix rich in? **[1]**

Section B

31. Study the following figure and answer the following questions: **[3]**

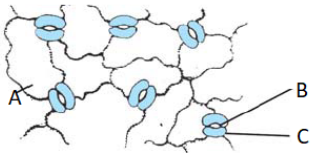


i. Identify the type of tissue shown in the given figure. Write the labellings - A, B, C, D.

ii. Is the given type of tissue in the figure is flexible or not? Give a reason for your answer.

iii. What are the functions of the tissue shown in the given figure?

32. Observe the given below diagram and answer the following questions: **[3]**

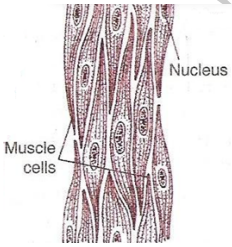


i. What does A represent in the given diagram? How does cell 'A' of root hairs cells help in water absorption?

ii. How does B in the given diagram help the plants?

iii. Out of A, B, and C cells in the above diagram, which cell helps in the closing and opening of the stomata? Write the name of the cell.

33. Observe the following diagram and answer the following questions: **[3]**



i. Identify the type of tissue mentioned in the given figure.

ii. Write any two characteristics of the type of tissue mentioned in the given figure.

iii. Where is the given tissue found in our body? What is the nature of the given tissue mentioned in the diagram?

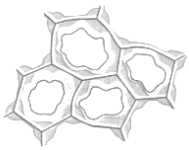
34. **[3]**

i. Identify the tissue given in the following figure.

ii. Mention the characteristic features of the cells.

iii. Specify the function of this tissue.

iv. Name any one part of the plant, where these cells are present.



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35. Observe the given below image of the tissue and answer the following questions: **[3]**

i. Identify the type of tissue shown in the given image.

ii. Where is it found?

iii. Why this tissue acts as an insulator?

Section C

36. **Read the following text carefully and answer the questions that follow:** **[4]**

The animal body are covered by epithelial tissue. The epithelial tissue cover most of the organ and cavity with in the body. It also form barrier to keep different body systems separate. The skin, the lining of the mouth, lining of the blood vessels, lung alveoli and kidney tubules are all made of epithelial tissue. The oesophagus and lining of mouth are covered with squamous epithelium. Skin help in protecting the body. The columnar cell have hair-like projection called cilia. Cuboidal epithelium form lining of the kidney tubules and duct of salivary gland.

i. What type of cell are present where absorption and secretion occur? (1)

ii. Skin helps in the protection of body explain? (1)

iii. How cilia clear mucus? (2)

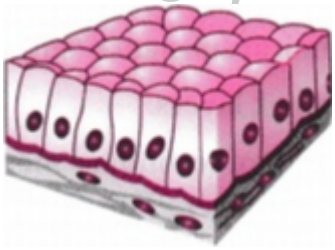
OR

What is glandular epithelium? (2)

37. **Read the following text carefully and answer the questions that follow:** **[4]**

The covering or protective tissues in the animal body are epithelial tissues. Epithelium covers most organs and cavities within the body. It also forms a barrier to keep different body systems separate. Epithelial tissue cells are tightly packed and form a continuous sheet. The skin, which protects the body, is also made of squamous epithelium. Skin epithelial cells are arranged in many layers to prevent wear and tear. This columnar epithelium facilitates movement across the epithelial barrier. In the respiratory tract, the columnar epithelial tissue also has cilia, which are hair-like projections on the outer surfaces of epithelial cells. Cuboidal epithelium forms the lining of kidney tubules.

i. Identify the type of epithelial tissue shown in the following figure. (1)



ii. Which cell is present in the inner lining of the intestine? (1)

iii. Is excretion is the main function of the cuboidal epithelium? (2)

OR

Sometimes a portion of the epithelial tissue folds inward, and a multicellular gland is formed which is called a? (2)

38. **Read the following text carefully and answer the questions that follow:** **[4]**

Plants are stationary or fixed they don't move. Since they have to be upright, they have a large quantity of supportive tissue. The supportive tissue generally has dead cells. Animals, on the other hand, move around in

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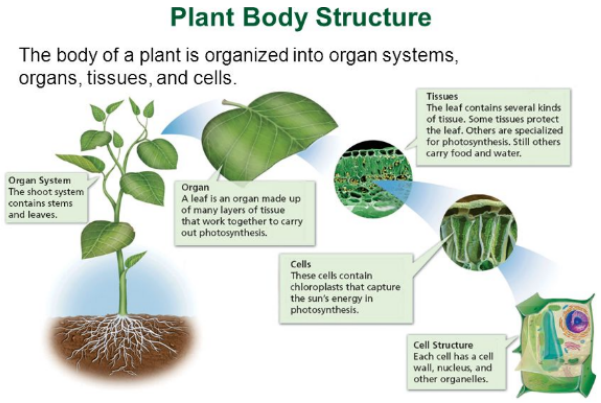
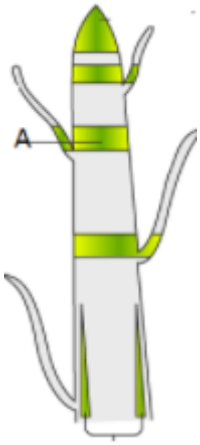
search of food, mates and shelter. Another difference between animals and plants is in the pattern of growth. The growth of plants occurs only in certain specific regions. New cells produced by meristem are initially like those of meristem itself, but as they grow and mature, their characteristics slowly change and they become differentiated as components of other tissues. The girth of the stem or root increases due to lateral meristem (cambium). Cells of meristematic tissue are very active, lack vacuoles.



i. Is meristematic tissue composed of a single type of cell? (1)

ii. Identify A in the given figure. (1)



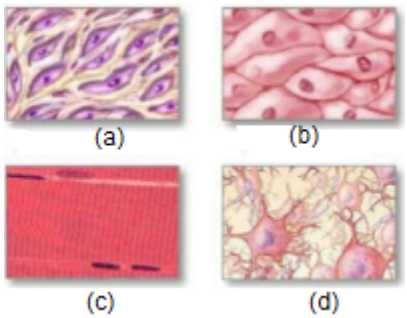
iii. Which meristematic is present at the growing tips of stems and roots? (2)

OR

Mention some properties of cells of meristematic tissue. (2)

39. **Read the following text carefully and answer the questions that follow:** **[4]**

Animal tissues are of many types such as epithelial tissue, connective tissue, muscular tissue and nervous tissue. Blood is a type of connective tissue, and muscle forms muscular tissue. The nature of the matrix differs in concordance with the function of the particular connective tissue. Blood has a fluid (liquid) matrix called plasma, in which red blood corpuscles, white blood corpuscles and platelets are suspended. Blood flows and transports gases, digested food, hormones and waste materials to different parts of the body. Bone is another example of connective tissue. It forms the framework that supports the body. It also anchors the muscles and supports the main organs of the body. Another type of connective tissue, cartilage, has widely spaced cells.



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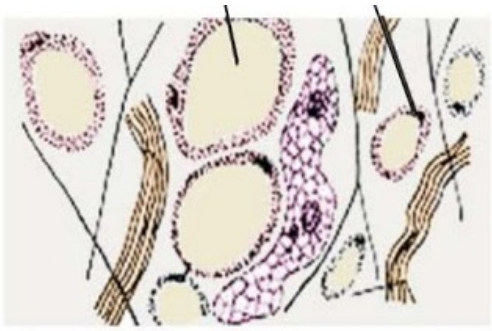
i. Identify the following tissue. (1)



ii. Are the cells of connective tissues loosely spaced? (1)

iii. What are the components of the matrix of bone? (2)

OR

Where is cartilage found in the human body? (2)

40. **Read the following text carefully and answer the questions that follow:** **[4]**

Plant tissue is consists of meristematic tissue and permanent tissue. Meristematic tissue which is responsible for the growth of plants they are dividing tissue and permanent tissue provides permanent shape, size, and function to the plant they are also further classified as simple permanent tissue and complex permanent tissue. The plant tissue is responsible for performing various functions such as providing flexibility to plant parts as to stalk which can bend easily without breaking while some provide strength to the plant some of them have modified themself to provide floatation in an aquatic plant.

i. Which part of the plant is responsible or growth of tip of stem and root? (1)

ii. Which type of tissue present in the aquatic plants how it helps the aquatic plant to float? (1)

iii. Which plant tissue provide flexibility? (2)

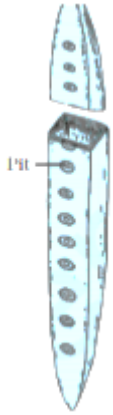
OR

Why husk of the coconut is hard and stiff? (2)

41. **Read the following text carefully and answer the questions that follow:** **[4]**

The process of taking up a permanent shape, size, and a function is called differentiation. Differentiation leads to the development of various types of permanent tissues. A few layers of cells beneath the epidermis are generally simple permanent tissue. another type of permanent tissue is complex tissue. Complex tissues are made of more than one type of cells. All these cells coordinate to perform a common function. Xylem and phloem are examples of such complex tissues. Xylem consists of tracheids, vessels, xylem parenchyma and xylem fibres. Phloem is made up of five types of cells: sieve cells, sieve tubes, companion cells, phloem fibres and the phloem parenchyma.

i. Identify the type of cell in the given figure (1)



ii. Which part of desert plants reduces the loss of water? (1)

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iii. What is the dead element present in the phloem? (2)

OR

Is cardiac muscle A involuntary muscle? (2)

42. **Read the following text carefully and answer the questions that follow:** **[4]**

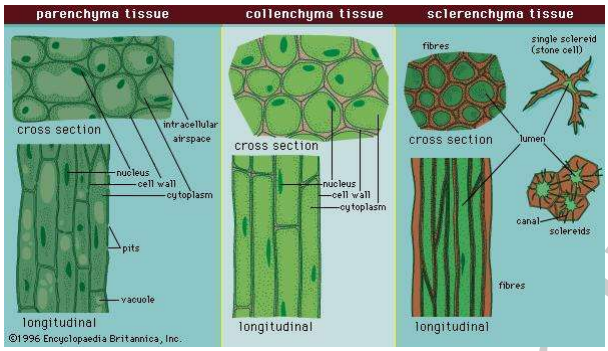
Permanent tissues are of two types that is Simple permanent tissues and Complex permanent tissues.

Simple permanent tissues subdivided as follows:

i. **Parenchyma:** Tissues provide support to plants. They are loosely packed and has large intracellular space. Parenchyma with chlorophyll which performs photosynthesis is called chlorenchyma.

ii. **Collenchyma:** Tissue are thickened at the corners, have very little intercellular space. It allows easy bending of various parts of a plant without breaking.

iii. **Sclerenchyma:** Cells of this tissue are dead and commonly seen in the husk of a coconut.



i. In which of the simple plant tissue, deposition of lignin is found? Also describe lignin. (1)

ii. Why is cork impervious to gases and water? (1)

iii. Which type of tissue is present in the cortex of the root and veins of the leaves? (2)

OR

Which tissue in plants provides them flexibility? (2)

43. **Read the following text carefully and answer the questions that follow:** **[4]**

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.

i. The flexibility in plants is due to which tissue? (1)

ii. Is aerenchyma provides mechanical support? (1)

iii. Is apical and intercalary meristems permanent tissue? (2)

OR

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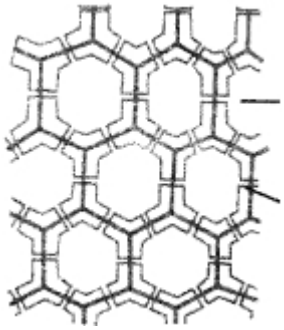
Menion the function of the tissue which is shown in the below diagram? (2)



44. **Read the following text carefully and answer the questions that follow:** **[4]**

Animal tissue has various types of epithelial tissue, connective tissue, muscular tissue, and nervous tissue and of tissue one of them is the connective tissue which consists of blood, bone, cartilage. Blood is the fluid matrix called plasma in which red blood cells, white blood cells, and platelet are suspended while bone form the framework that supports the body it also anchors the muscle and supports the main organ of the body. Two bones are connected by a ligament. cartilage is a solid matrix composed of sugar and protein.

i. Name the tissue which connects muscle to a bone. (1)

ii. Matrix of bone cells are composed of (1)

iii. Two bones are connected by ligament how muscle connects to the bone? (2)

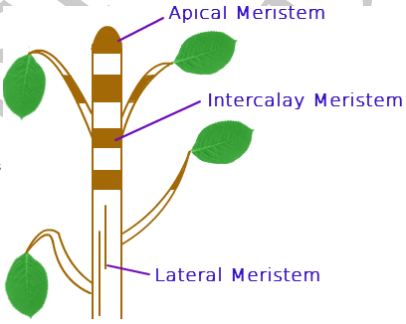
OR

Where the cartilage is found in the human body? (2)

45. **Read the following text carefully and answer the questions that follow:** **[4]**

The tissue is a group of cells having similar origin, structure& function. Study of tissues is called Histology. In unicellular organism (Amoeba) single cell performs all basic functions, whereas in multi-cellular organisms (Plants and Animals) shows division of labour as Plant tissue & Animal tissues. Plant tissues are two types:

Meristematic & Permanent tissue.



Meristematic tissue: The meristems are the tissues having the power of cell division. It is found on that region of the plant which grows.

Following are the types of Meristems:

The Apical meristems- It is present at the growing tip of the stem and roots and increases the length.

The lateral meristems- It present at the lateral side of stem and root (cambium) and increases the girth.

The intercalary meristems- It present at internodes or base of the leaves and increases the length between the nodes.

i. Which tissue help in the secondary growth of the plant? (1)

ii. In what region of the plant does intercalary meristematic growth occur? (1)

iii. Where does meristematic tissue mostly found in a plant? (2)

OR

Why cambium is called lateral meristem? (2)

Section D

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46. Write a note on the protective tissue in plants. (Give appropriate diagram also). **[5]**

47. Briefly describe striated and smooth muscles with their functions. **[5]**

48. Describe the types of connective tissues along with their functions. **[5]**

49. List the characteristics of cork. How are they formed? Mention their role. **[5]**

50. What is a permanent tissue? Classify permanent tissues and describe them. **[5]**

51. i. Describe adipose tissue with the help of diagram. **[5]**
    ii. How is adipose tissue different from blood tissue?

52. i. What will happen if cells are not properly organised in tissue? **[5]**
    ii. Under certain circumstances squamous epithelium is known as stratified squamous epithelium. Justify.

53. The transportation system of plants is composed of complex permanent tissue. They have their transportation system within themselves. Justify in detail with appropriate diagrams. **[5]**

54. Differentiate between various types of muscular tissues. Draw appropriate diagrams. **[5]**

55. Diagrammatically show the difference amongst three types of muscle fibres. **[5]**

56. We can control some of the actions of our body, but some are not in our control. Comment on this statement. **[5]**

57. Write differences between animal tissue and plant tissue. **[5]**

58. Differentiate between meristematic and permanent tissues in plants. **[5]**

59. Differentiate between bone and cartilage with respect to structure, function and location. **[5]**

60. Describe the structure and function of different types of epithelial tissues. Draw the diagram for each type of epithelial tissue. **[5]**

61. Draw well-labeled diagrams of various types of muscles found in the human body. **[5]**

62. Explain the significance of the following: **[5]**
    i. Hair-like structures on epidermal cells.
    ii. The epidermis has a thick waxy coating of cutin in desert plants.
    iii. Small pores in epidermis of leaf.
    iv. Numerous layers of epidermis in cactus.
    v. Presence of a chemical suberin in cork cells.

63. Differentiate between sclerenchyma and parenchyma tissues. Draw a well-labeled diagram. **[5]**

64. i. Which process in meristematic tissue converts it to permanent tissue? **[5]**
    ii. Which feature of meristematic tissue helps aquatic plants to maintain buoyancy in water?
    iii. Why epidermis of plants living in dry habitats is thicker?
    iv. Identify the following.
        a. Living component of xylem
        b. Dead element of phloem
    v. Which type of conducting tissues conduct water and minerals vertically?

65. Why are xylem and phloem called complex tissues? How are they different from one other? **[5]**

Section E

66. **State whether the given statement is True or False:** **[10]**
    (a) Cardiac muscles are found exclusively in the heart. **[1]**
    (b) Sclerenchyma consists of long and narrow cells with thick, lignified cell walls. **[1]**
    (c) Bone matrix is made up of proteins, and rich in salts of calcium and magnesium. **[1]**
    (d) Epithelial tissue is protective tissue in animal body. **[1]**

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(e) Cartilage is a specialized connective tissue that is compact and less vascular. **[1]**

(f) Epidermal cells of the roots bear long hair-like parts called root hairs. **[1]**

(g) The cells of parenchyma tissue are living, elongated, and irregularly thickened at the corners. **[1]**

(h) The epithelial layer is a permeable layer. **[1]**

(i) Xylem transports food from leaves and storage organs to all other parts of the plant. **[1]**

(j) The epithelial layer does not allow the regulation of materials between the body and external environment. **[1]**

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