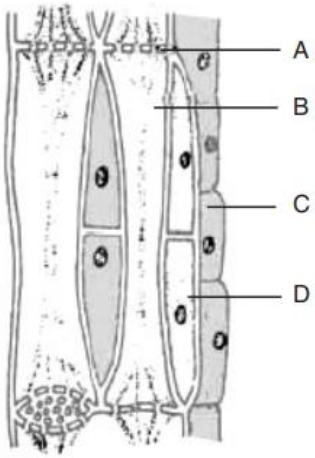
THE VILLAGE
INTERNATIONAL SCHOOL
"We Nurture Dreams"

CHAPTER 6

TISSUES

3 MARKS EACH

Q. 1. (a) Name the tissue in the following figure :



(b) Identify the parts 'A', 'B', 'C' and 'D'.

Ans. (a) Phloem. (b) 'A'–Sieve plate, 'B'–Sieve tube, 'C'–Phloem parenchyma, 'D'–Companion cell.

Q. 2. (a) Differentiate between epidermal and cork cells. (b) Why are they called protective tissues ?

Ans. (a)

Epidermal Cells	Cork cells
Single layered	Multi layered
Living	Non-living
Secrete cutin	Secrete suberin
Present in younger plants.	Present in older plants.

(b) They are called protective tissues because
(i) they protect mechanical injury and infection.
(ii) they prevent loss of water.

Q. 3. List two characteristics of cork. How is it formed ? Mention its role in trees.

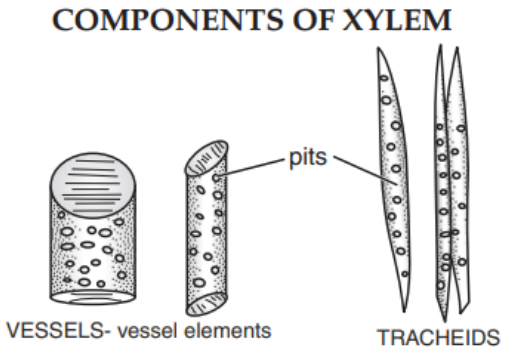
Ans. (i) Non-living (ii) Compactly arranged (iii) No intercellular spaces (iv) Multi-layered (v) Contains suberin (any two) A strip of secondary meristem replaces the epidermis. Cells on the outside are cut forming cork. Protection, makes the plant impervious to gases prevents loss of water, prevents mechanical injury or infection

Q. 4. Write three distinguishing features between cells of meristematic and permanent plant tissues.

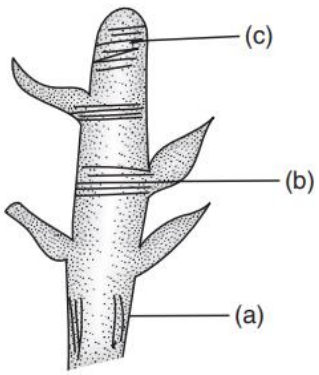
S.No.	Meristematic tissue	Permanent tissue
1.	Cells possess dividing ability.	Cells generally do not divide.
2.	Cells are living.	Cells can be living or dead.
3.	Main function is to bring about growth.	Performs various type of functions.

Q. 5. (a) State one point of difference between xylem and phloem. (b) Draw a neat diagram of xylem vessel and a tracheid.

Ans. (a) Xylem conducts water in the plant body. Phloem transports food in the plant body.



Q. 6. Label the following and give one function of each part labelled (a), (b) and (c).



Ans. (a) Lateral meristem : for increase in growth of plant parts. (b) Intercalary meristem : for formation of leaves, branches etc. (c) Apical meristem : increases length of the stem and the root.

Q. 7. Mention three characteristic features and three functions of xylem.

Ans. Consists of tracheids, vessels, parenchyma and xylem fibres.

(i) Transport of water and minerals vertically. (ii) Parenchyma stores food. (iii) Fibres provide support.

Q. 8. Explain in brief any three roles of epidermis in plants.

Ans. (i) The epidermis protects all parts of the plants. (ii) Epidermal cells on the aerial part of the plant often secrete a waxy, water resistant layer which helps in protection against water loss and mechanical injury. (iii) Protect against invasion of parasitic fungi.

Q. 9. Explain how the bark of a tree is formed. How does it act as a protective tissue ?

Ans. As plants grow older, the outer protective tissue undergoes certain changes. A strip of secondary meristem replaces the epidermis of stem. Cells on the outside are cut off from this layer. This forms the several layered thick cork or bark. They also have a chemical called suberin in their wall which makes them impervious to gases and water.

Q. 10. What are the small pores observed in the epidermis of the leaf called ? Write its two main functions.

Ans. Small pores are called stomata. Function : Exchange of gases and transpiration.

Q. 11. Give reasons for the following : (a) Bark of a tree is impervious to gases and water. (b) In desert plants, epidermis has a thick waxy coating. (c) Epidermal cells of the roots generally have hair like parts.

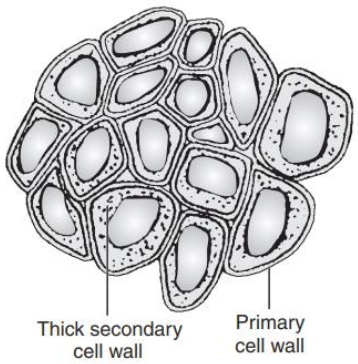
Ans. (a) Cells of bark are dead and compactly arranged without intercellular spaces. They have a chemical called suberin in their walls that make them impervious to gases and water. (b) The thick waxy coating on epidermis is of cutin on its outer surface which is a chemical substance with water-proof quality. This helps in protection against loss of water and parasitic fungi. (c) Function of epidermal cells in roots is water absorption. Hair like parts greatly increase the total absorptive surface area.

Q. 12. Identify the simple permanent plant tissue with the following descriptions and also mention their location in the plant body : (a) Cells have irregular wall thickenings. (b) Tissues with large intercellular spaces and cells having large air cavity. (c) Cells are long, narrow and dead in nature

Ans. (a) Collenchyma, (b) Aerenchyma, (c) Sclerenchyma. Location : Collenchyma : leaf stalks below the epidermis. Aerenchyma : stem and leaves of aquatic plants. Sclerenchyma : hard part of the plant (seed coat, mid rib etc.)

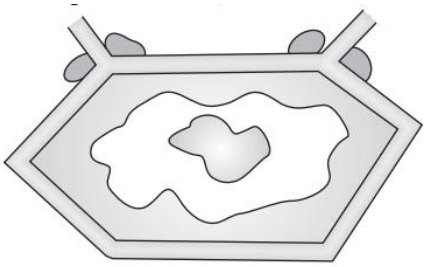
Q. 13. (i) Draw a labelled diagram of longitudinal section of sclerenchyma. (ii) Name any two regions in the plant, where this tissue is present.

(i)



(ii) Two regions : Stems/Around vascular bundles/ Veins of leaves/Hard covering of seeds and nuts. (any two)

Q. 14. (a) Observe and identify the following plant cell. (b) Explain two characteristic features of this cell. (c) Suggest one part of the plant where such cells are present.



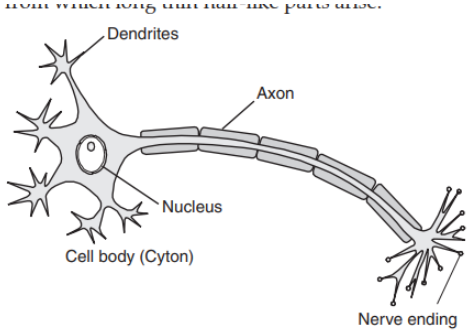
Ans. (a) Collenchyma, (b) Flexibility and mechanical support, (c) Leaf stalks, below epidermis.

Q. 15. Give reasons for the following : (a) Cells of sclerenchyma tissue have a narrow lumen. (b) Branches of a tree move and bend freely in high wind velocity. (c) It is difficult to pull out the husk of coconut.

Ans. (a) Sclerenchyma tissues have cell wall thickened due to lignin and hence have narrow lumen. (b) Branches of a tree have collenchyma which provide flexibility. (c) Husk of coconut is composed of sclerenchyma and these fibres are closely packed.

Q. 16. Describe the structure, function and location of the nervous tissue

Ans. The nervous tissue is made up neurons which consists of a cell body with a nucleus and cytoplasm, from which long thin hair-like parts arise.

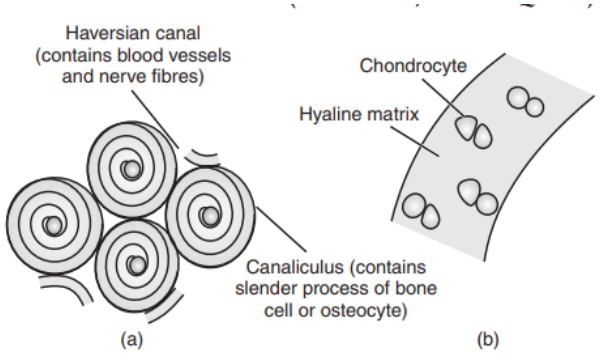


Ans. The nervous tissue is made up neurons which consists of a cell body with a nucleus and cytoplasm, from which long thin hair-like parts arise. On stimulation, the nerve cells transmit the stimulus very rapidly from one place to another within the body. Nervous tissues are located in the brain, spinal cord and nerves.

Q. 17. Identify the type of tissues in the following : (a) Vascular bundle (b) Inner lining of the intestine (c) Lining of kidney tubule (d) Iris of the eye (e) Muscles of the heart (f) Bronchi of lungs.

Ans. (a) Xylem and phloem tissues (b) Columnar epithelium (c) Cuboidal epithelium (d) Involuntary muscular tissues (e) Cardiac muscles (f) Unstriated muscular tissues

Q. 18. Identify the two types of tissues given in the diagram. Write two distinguishing features each of the two.



Ans. (a) Bone (Connective tissue) (b) Cartilage (Connective tissue) Bone : (i) It has a hard matrix. (ii) They are usually hollow. Cartilage : (i) This tissue is elastic and harder but softer then bone. (ii) The matrix of cartilage is solid but elastic.

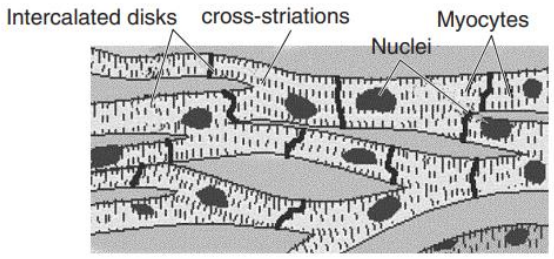
Q. 19. (a) State the differences between tendon and ligament. (b) Give the function of adipose tissues.

Ans. (a) Differences between tendon and ligament :

	Tendon	Ligament
1.	They join bone to muscles.	They join bone to bone.
2.	They have limited flexibility.	They have elasticity.
3.	They have more strength.	They have less strength.

b) Adipose tissue stores fat and provides insulation.

Q. 5. Draw a diagram of cardiac muscle and label any two parts. Write one main function of cardiac muscle.



Function : Beating of heart

Q. 20. (i) Name the following : (a) Tissues that connect muscles to bone. (b) Tissues that store fat in our body. (c) Tissues that transport food in plants. (d) Tissues that provide flexibility in plants. (ii) List the role of cork in plants.

Ans. (i) (a) Tendon (b) Adipose tissues (c) Phloem (d) Collenchyma (ii) (a) It prevents loss of water by evaporation. (b) It protects plant from the invasion of parasites and harmful micro-organisms

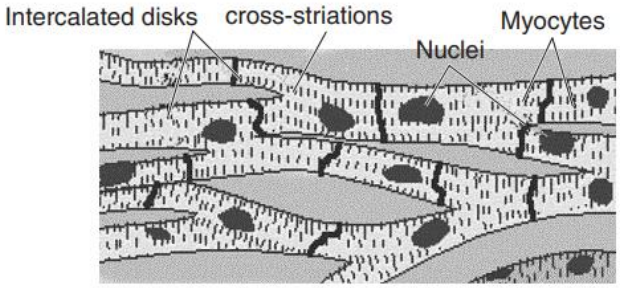
Q. 21. Identify the animal tissues from the given descriptions and also mention their location in the human body. Tissue 'A' - cells are filled with fat globules and the tissue acts as an insulator. Tissue 'B' – has cylindrical branched cells and the tissue shows rhythmic contraction and relaxation though outlife.

Ans. Tissue 'A' : Adipose tissue, Present just below epithelium. Tissue 'B' : Cardiac muscle, Present in heart.

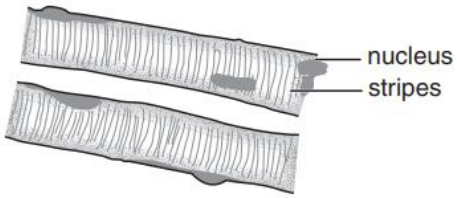
Q. 22. Name any three connective tissues. Give any one function of each.

Ans. (i) Blood : Transport of materials such as gases, waste, digested food etc. (ii) Bone : Supporting framework of the body. (iii) Ligament : Connects two bones together. (iv) Tendon : Connects bones to muscle.

Q. 23. Make a labelled diagram to highlight two differences between striated and cardiac muscles. Write one function of striated muscles in our body.



Cardiac muscles



Striated muscles

Function : Striated muscles help in body movement.

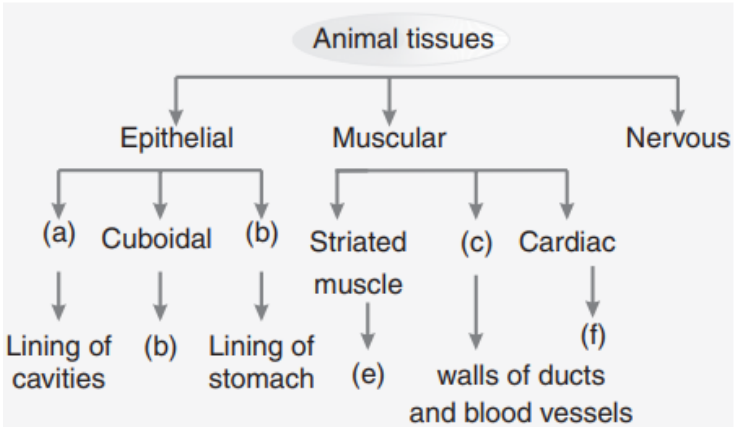
Q. 24. Identify the type of muscular tissues having following characteristics : (i) cylindrical, branched and uninucleated. (ii) long with pointed ends and uninucleated. (iii)long cylindrical, unbranched and multinucleated.

Ans. (i) Cardiac muscles. (ii) Smooth muscles or unstriated muscles. (iii) Striated muscles

Q. 25. Name the type of epithelial tissue that lines the following : (i) Oesophagus (ii) Respiratory tract (iii) Kidney tubules (iv) Inner lining of intestine (v) Blood vessels (vi) Ducts of salivary glands

Ans. (i) Squamous epithelium (ii) Ciliated epithelium (iii) Cuboidal epithelium (iv) Columnar epithelium (v) Squamous epithelium (vi) Cuboidal epithelium

Q. 26. Complete the following flow chart :



Ans. (a) Squamous (b) Columnar (c) Unstriated (d) Lining of kidney tubules (e) Limbs (f) Heart

Q. 27. What will happen if : (i) Apical meristem is damaged or cut ? (ii) Cork is not formed in older stems and roots ? (iii) Lymph is not returned to blood ?

Ans. (i) If apical meristem is removed or damaged then growth in length of the plant will stop. (ii) If cork is not formed in older stems and roots, the outer tissues will rupture with the increase in girth and expose the interior to desiccation and infection. (iii) Blood volume will decrease during passage of materials from tissues to blood and vice versa.

Q. 28. What will happen if cells are not organised in tissues ?

Ans. Every organism be it unicelluar or multicellular needs to perform a lot of functions like respiration, digestion, locomotion etc. Cells that are present in group and specialise in one particular function form tissues. Some tissues help in growth, some in locomotion, some in body movement. So if tissues are not present in bodies of living organism, then these kind of highly organised and specialised processes will become disorganised. There will be no co-ordination in the functioning of cells and body.

Q. 29. What will happen if — (i) Ligament gets overstretched ? (ii) Heparin is absent in blood ? (iii) Striated muscles contract rapidly for longer duration ?

Ans. (i) Overstretching of ligament causes sprain. (ii) Absence of Heparin in blood causes coagulation of blood inside the blood vessels. (iii) Striated muscle contraction causes fatigue due to accumulation of lactic acid.

Q. 30. What is Synapse ? Explain.

Ans. It is a junction between two neurons without developing an organic union. The terminal branch end of an axon comes in near contact with a dendrite terminal. A narrow fluid filled space occurs between the two. An activated axon end passes out a neurotransmitter like acetylcholine which provides sensation to dendrite terminal. This helps in transfer of impulse from one neuron to the next.

5 MARKS EACH

Q. 1. (a) Analyse the reason behind the following statements : (i) Epidermis is thicker in desert plants though it is usually single layered. (ii) Presence of waxy layer (secreted by epidermis) on the outer surface of plants. (b) Discuss the cell arrangement which supports the fact that epidermis is a protective tissue

Ans. (a) (i) In desert habitat, protection against water loss is essential. (ii) The waxy covering aids in protecting the plant against loss of water, mechanical injury and invasion by parasitic fungi.

(b) Epidermis is the outermost covering of cells in plants. It is usually made up of a single layer of cells. On aerial parts of a plant epidermal cells often secrete a waxy, water resistant layer on their outer surface to prevent loss of water from plant. The cells of epidermis are present in a continuous layer without intercellular spaces. Small pores are present on the epidermis of leaf. These pores are called as stomata, which help in gaseous exchange and transpiration. As the plant grows older, a strip of secondary meristem replaces the epidermis of stem and forms a thick cork.

Q. 2. The growth of plant occurs only in specific regions: (i) Name the tissue which is responsible for this growth. (ii) State the different types of this tissue. (iii)Write one function of each of the above-mentioned tissue.

Ans. (i) Meristematic tissue. (ii) Apical meristem, lateral meristem, intercalary meristem. (iii)Apical meristem increases the height of the plant. Intercalary meristem increases the length of organs. Lateral meristem increases the girth of stem.

Q. 3. (i) “Epidermal cells are protective in nature”. Justify and support your answer with two examples. (ii) Name the structure that receives impulse in neuron.

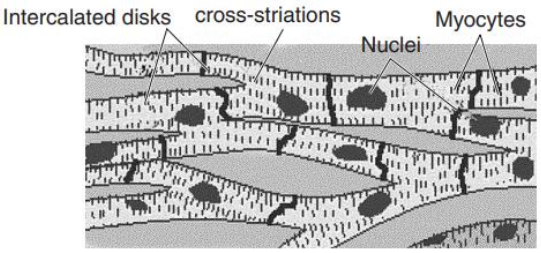
Ans. (i) Epidermis plays a protective role. It protects all the external parts of a plant against loss of water. (a) In some desert plants, the epidermis has a thick waxy coating of cutin that prevents water loss from the plants. (b) Epidermal cells on the aerial parts of the plant secrete a waxy, water resistant layer, on the outer surface that helps in protection against loss of water and mechanical injury. (ii) Dendrite receives impulses in neuron.

Q. 4. Do all cells of our body look like in terms of shape, size and structure? What similarities do they have? Illustrate by drawing diagrams of various cells present in human body.

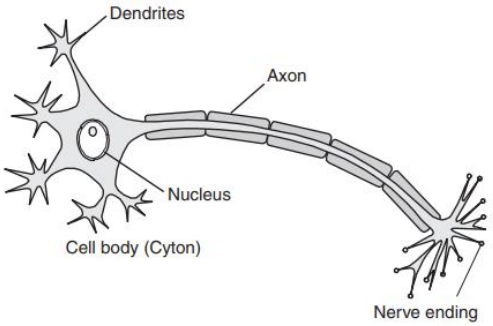
OR

Draw a labelled diagram of neuron.

Ans. All cells of our body look different in terms of shape, size as will as structure as they are needed for different functions at different parts of the body. Cells in our body have no demarcation on the basis of dividing and non-dividing tissue. Cells Specialised in one function are often grouped together in the body. Example : Heart muscle cells show rhythmic contraction and relaxation are cylindrical and branched. Also, the nerve cell is a long ‘string’ shape in order to stretch to connect to other neurons.



Cardiac muscles



Q. 5. Answer the followings :

(a) Name the constituents of phloem tissues.

(b) Write the specific function of cardiac muscle.

(c) State two differences between tendon and ligament.

(d) Name the tissue that : (i) forms of inner lining of our mouth. (ii) forms the soft parts of leaf, stem, roots and fruit. (e) Write two function of adipose tissues.

Ans. (a) Sieve Tubes, companion cells, parenchyma, phloem fibre.

(b) Creates an efficient pumping action of heart.

(c)

Tendon	Ligament
(i) It connects muscles to bones.	It connects bone to bone.
(ii) It is tough and non elastic.	It is strong but elastic.

(d) (i) Squamous epithelium (ii) Scleroid.

(e) Adipose tissue stores fat and acts as an insulator.

Q. 6. Identify the following tissues : (i) The epithelial tissue which has pillar like tall cells ? (ii) The cells of this tissue are filled with fat globules. (iii)The movement of this tissue pushes the mucus forward to clear respiratory tract. (iv) It gives buoyancy to lotus to help it afloat. (v) Tissue present in lung alveoli.

Ans. (i) columnar (ii) adipose (iii) ciliated columnar (iv) aerenchyma (v) squamous.

Q. 7. What are the differences between striated, Unstriated and cardiac muscles ?

S. No.	Striated muscles	Unstriated (Smooth) muscles	Cardiac muscles
1.	They are found in limbs, tongue, pharynx etc.	They are present in the wall of visceral organs.	They form the heart.
2.	Long, cylindrical with blunt ends.	Short, spindle shaped with pointed ends.	Short, branched and cylindrical with flat ends.
3.	Multinucleate, nuclei peripheral.	Uninucleate, nucleus in the centre.	One or two nuclei in the centre.
4.	They are voluntary in action.	They are involuntary in action.	They are involuntary in action.
5.	Dark and light bands are present.	No bands present.	Bands present.

Q. 8. Describe the structure of blood.

Ans. Blood is a fluid connective tissue and consists of plasma and blood corpuscles. Plasma is a fluid matrix. It contains 85-90% water, about 7% proteins, 0.9% salts, 0.1% glucose and very small amounts of hormones. The blood corpuscles are suspended in the plasma. Blood corpuscles : Blood corpuscles or cells are of three types—RBCs, WBCs and Blood platelets. (i) Red Blood Cells (RBCs) are also called erythrocytes and are bi-concave disc-like structures devoid of nuclei in mammals. A network of protein and fat like compounds is present throughout the cells.

The most important functions of the RBC are transport of oxygen, aiding and transport of CO_2 and the prevention of excessive acidity in the blood. (ii) White Blood Corpuscles : They are also called leucocytes. They are comparatively smaller in size, semi-transparent, colourless and irregular in appearance. They are devoid of haemoglobin. WBCs are of two types—granulocytes and agranulocytes. (iii)Blood platelets : They are about 2-4 µm in diameter and without any nucleus. Their main function is to liberate thromboplastin which causes blood clotting at the site of injury.