TISSUES

REVISION NOTES:

1.Tissues ensure division of labour in multicellular organisms.
The tissues present in plants and animals are different owing to variations in their body organization and mode of living

2.Plants show two main types of tissues - meristematic tissues and Permanent tissues.

(a)Meristematic tissues may be apical, lateral or intercalary,depending on their location in the plant.

(b)Permanent tissues are classified into simple and complex tissues, Simple tissue shows only one type of cells whereas complex tissues consist of more than one type of cells.

3.Three types of simple permanent tissues are parenchyma, collenchyma and sclerenchyma

(a)Parenchyma is a supporting and storing tissue, composed of unspecialized, thin-walled cells with large intercellular spaces.

(b)Collenchyma cells are elongated, with irregularly thickened cell walls. It provides mechanical support and elasticity to the plant.
(c)Sclerenchyma: The main supporting tissue, sclerenchyma, consists of long and narrow cells with thick and lignified cell walls.

Parenchyma and collenchyma are living tissues whereas sclerenchyma is a dead tissue.

4.Epidermis is the outer protective covering of the plant and is usually layered by cuticle.
Stomatal pores, present in the epidermis, are essential for transpiration and gaseous exchange.

In older plants, many layered cork is seen, made up of dead and compactly arranged cells.

5.Xylem and phloem are important types of complex tissues in plants. Xylem is composed of tracheids, vessels, xylem parenchyma and xylem fibres. It conducts water and minerals from roots to aerial parts of the plant.

6.Phloem consists of sieve tubes, companion cells, phloem fibres and phloem parenchyma. It transports food from leaves and storage organs to all other parts of the plant.

7.Animal tissues are grouped into 4 basic types - epithelial, connective, muscular and nervous tissue.
a)Epithelial tissues are the covering or protective tissues which act as a barrier between the various systems of the body . It rests on the basement membrane and is composed of tightly packed cells.
b)Connective tissue is the binding and supporting tissue of the animal body. Matrix forms the main bulk of this tissue , whereas the cells are loosely spaced and less in number.

8. Blood, bone, ligament, tendon, cartilage, areolar tissue and adipose tissue are important connective tissues present in our body.
Blood is a fluid connective tissue in which RBCs, WBCs and platelets are suspended and plays a significant role in the process of transportation.

9. Functions of protection, providing skeletal framework and anchoring are carried out by the strong and hard bone tissue.

10. Ligaments connect bones to bones whereas tendons connect bones to muscles.
Cartilage provides support and flexibility to the body parts.

11. Areolar tissue repairs the injured tissues and fills spaces within organs. These are found between the skin and muscles, around blood vessels and nerves and in bone marrow.

12. Adipose tissue serves as a fat reservoir and also carries out the function of insulator. It is found below the skin and between internal organs.

13. All movements in our body are brought about by the muscular tissue through the contraction and relaxation of their contractile proteins.

14.Striated, unstriated and cardiac are three types of muscle tissues.

15. Nervous tissue is present in the brain, spinal cord and nerves.
Neuron is made up of cell body, dendrites and axon.
Neurons are specialized to receive and conduct impulses rapidly.

GLOSSARY:

1. Tissues: A group of specialized cells with similar structure, working together to perform a common function,

2.Meristematic tissue: Tissue made up of actively dividing cells, present in the growing areas of the plant body.

3. Apical meristem: Meristem present at the growing tips of stem and root that cause the stem and root to increase in length.

4. Lateral meristem: Meristem located on the lateral portion of the plant and responsible for increasing the girth of its stem and root.
5. Intercalary meristem: Meristem found between already differentiated tissues, in locations such as the base of leaves or internode.

6. Permanent tissue: A well-differentiated plant tissue derived from meristematic tissue, which has lost its ability to divide.

7. Differentiation: The process by which a cell attains a permanent shape, size and function.

8. Simple permanent tissue: A permanent tissue composed of only one cell type.

9. Complex permanent tissue: A permanent tissue composed of more than one type of cells which coordinates to perform a common function.

10. Chlorenchyma: Parenchyma whose cells contain chloroplasts and hence performs photosynthesis.

11. Aerenchyma: Parenchyma containing large air cavities, providing buoyancy to aquatic plants and allowing the circulation of gases.

12. Xylem: The complex tissue that conducts water and minerals in vascular plants and composed of tracheids, vessels, fibres and parenchyma.

13.Phloem: The food-conducting tissue of vascular plants, consisting of sieve tubes, companion cells, fibres and parenchyma.

14. Epidermis: The outermost, protective layer of cells covering the surface of a plant.

15. Stratified epithelium: An epithelium composed of multiple layers of cells, with only the basal layer being in contact with the basement membrane.

16. Ligament: A fibrous connective tissue that connects (or binds) bones to bones.

17. Tendon: A fibrous connective tissue that connects bones to muscles.

18.Voluntary muscles: Muscles which can be controlled according to our will.

19. Involuntary muscles: Muscles which are not under the control of our will.

20.Multinucleate cell: Cell containing more than one nucleus.

21. Uninucleate cell: Cell containing only one nucleus.
22. Neuron: A cell of the nervous system specialized to conduct nerve impulses and made up of cell body, axon and dendrites.

23. Impulse: An electrical signal transmitted along a nerve fibre in response to a stimulus.