

QB365 Question Bank Software Study Materials

Organisation of Tissues Important 2,3 & 5 Marks Questions With Answers (Book Back and Creative)

9th Standard

Science

Total Marks : 75

2 Marks

10 x 2 = 20

- 1) Name the tissue that connects muscle to bone in humans.

Answer : Tendons join skeletal muscles to bones in our body

- 2) Mention the type of epithelium seen in alveoli of lungs.

Answer : Squamous Epithelium.

- 3) Mention the stages of Meiotic Prophase - I.

Answer : Leptotene, Zygotene, Pachytene, Diplotene, Diakinesis.

- 4) What is the significance of Meiosis?

Answer : i) The constant number of chromosomes in a given species is maintained by meiotic division.

ii) Crossing over causes genetic variations among the species from one generation to the next.

- 5) What is bouquet stage?

Answer : During leptotene of meiotic prophase I, the chromosomes become uncoiled and assume long thread like structures and take up a specific orientation inside the nucleus. They form a bouquet stage

- 6) What is zygotene?

Answer : During zygotene of meiotic prophase I, the pairing of homologous chromosomes takes place. This is called synapsis

- 7) Distinguish Tracheids and Vessels.

Answer :

Tracheids	Vessels
Formed from single cells.	Made up of number of cells.
Ends are oblique and taper	Ends are round and transverse
Fraction of a cm in length	Several cms in length
Walls are thick, lumen-narrow.	Walls are less thick, lumen- wide.

- 8) Write a note on the significance of mitosis.

Answer : (i) This equational division results in the production of diploid daughter cells with equal distribution of genetic material (DNA). It maintains the diploid (2n) number of chromosomes in daughter cells.

(ii) In multicellular organisms growth, organ development and increase in body size are accomplished through the process of mitosis

(iii) Mitosis helps in repair of damaged and wounded tissues by renewal of the lost cells.

(iv) It is involved in replacement of old and dead cells.

- 9) Write about promeristem.

Answer : 1. A group of young meristematic cells of a growing organ

2. In plants they occupy a small area at the tip of the shoot and root.

10) Tabulate the differences between Tracheids and vessels.

Answer :

S.No	Tracheids	vessels
1.	Formed from single cell	Formed from many cells
2.	Ends are oblique and taper	Ends are round and transverse
3.	Fraction of cm in length	Several cm in length
4.	Walls are thick- lumen- narrow	Walls are less thick- lumen- wide.

3 Marks

10 x 3 = 30

11) What are intercalary meristems? How do they differ from other meristems?

Answer : It is a part of primary meristem which is detached due to formation of intermittent permanent tissue.

S.No	Intercalary meristems	Other meristems
1.	It is found at base of leaf. Eg: Pinus	It is found in growing plant. Eg: Root, Shoot

12) What is complex tissue? Name the various kinds of complex tissues.

Answer : (i) Complex tissues are made of more than one type of cells that work together as a unit.

(ii) Complex tissues consist of parenchyma and sclerenchyma cells. However, collenchymatous cells are not present in such tissues. Common examples are xylem and phloem.

13) Mention the most abundant muscular tissue found in our body. State its function.

Answer : The smooth muscle found in our body are the most abundant muscular tissue. Functions are:

1. Movement of food in the alimentary canal.
2. Contraction and relaxation of blood vessels.

14) What is skeletal connective tissue? How is it helpful in the functioning of our body?

Answer : 1. Skeletal connective tissue is otherwise called as supportive tissue. It forms the endoskeleton of the vertebrate body.

2. They support the body, protect various organs and help in locomotion. Their supportive tissue are cartilage and bone. Cartilage provides support and flexibility to the body parts. Bone support and protect soft tissues and organs.

15) Why should gametes be produced by meiosis during sexual reproduction?

Answer : In meiosis cell division four haploid daughter cells are formed. So gametes are produced by meiosis during sexual reproduction.

16) In which stage of mitosis the chromosomes align in an equatorial plate? How?

Answer : It is in metaphase stage. The duplicated chromosomes arrange on the equatorial plane and form the metaphase plate. Each chromosome gets attached to a spindle fibre by its centromere.

17) Which tissue is the main component of tendons and ligaments? How do they differ in function?

Answer : Dense Connective Tissue: It is a fibrous connective tissue densely packed with fibres and fibroblasts. It is the principal component of tendons and ligaments.

a. Tendons: They are cord like, strong, structures that join skeletal muscles to bones. Tendons have great strength and limited flexibility. They consist of parallel bundles of collagen fibres, between which are present rows of fibroblasts.

b. Ligaments: They are highly elastic structures and have great strength which connect bones to bones. They contain very little matrix. They strengthen the joints and allow normal movement

18) How are connective tissue classified?

Answer : Connective tissue are classified as follows:

1. Connective tissue proper - Areolar & Adipose tissue
2. Supportive connective tissue - Cartilage & bone
3. Dense connective tissue - Tendons & ligaments
4. Fluid connective tissue - Blood & Lymph

19) Define - Tendons.

Answer : They are cord like strong structures that join skeletal muscle to bone. Tendons have great strength and limited flexibility. They consist of parallel bundles of collagen fibres between which are present rows of fibroblasts.

20) What are the stages involved in prophase - I in meiotic cell division?

- Answer :**
1. Leptotene
 2. Zygotene
 3. Pachytene
 4. Diplotene
 5. Diakinesis

5 Marks

5 x 5 = 25

21) What are permanent tissues? Describe the different types of simple permanent tissue.

Answer : Permanent tissues:

(i) Permanent tissues are those in which, growth has stopped either completely or for the time being. At times, they become meristematic partially or wholly.

(ii) Permanent tissues are of two types namely (a) simple tissue and (b) complex Simple tissue: Simple tissue are homogeneous - composed of structurally and functionally similar cells. Eg: Parenchyma, collenchyma and sclerenchyma.

Parenchyma

(i) Parenchyma are simple permanent tissues composed of living cells.

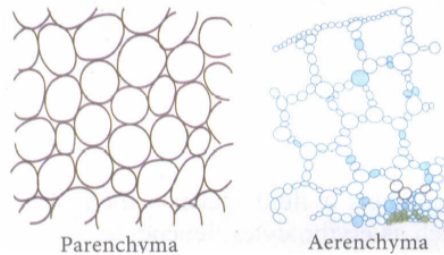
(ii) Parenchyma cells are thin walled, oval, rounded or polygonal in shape with well developed spaces among them.

(iii) In aquatic plants, parenchyma possesses intercellular air spaces, and is named as aerenchyma.

(iv) When exposed to light, parenchyma cells may develop chloroplasts and are known as chlorenchyma.

Functions:

Parenchyma may store water in many succulent and xerophytic plants. It also serves the functions of storage of food reserves, absorption, buoyancy, secretion etc



Collenchyma :

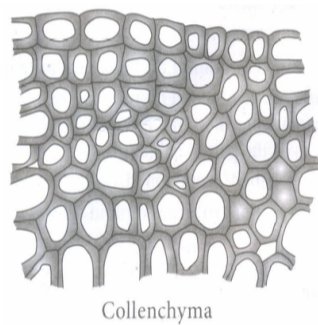
(i) Collenchyma is a living tissue found beneath the epidermis.

(ii) Cells are elongated with unevenly thickened non-lignified walls. Cells have rectangular oblique or tapering ends and persistent protoplast.

(iii) They possess thick primary non-lignified walls.

Functions:

They provide mechanical support for growing organs.



Sclerenchyma :

(i) Sclerenchyma consists of thick walled cells which are often lignified,

(ii) Sclerenchyma cells are dead and do not possess living protoplasts at maturity. Sclerenchyma cells are grouped into (i) fibres and (ii) sclereids.

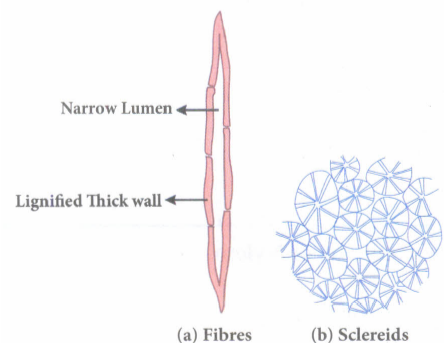
(iii) Fibres are elongated sclerenchymatous cells, usually with pointed ends. Their walls are lignified. Fibres are abundantly found in many plants. Eg., Jute.

Sclereids:

(i) Sclereids are widely distributed in plant body. They are usually broad, may occur in single or in groups.

(ii) Sclereids are isodiametric, with lignified walls. Pits are prominent and seen along the walls.

(iii) Lumen is filled with wall materials. Sclereids are also common in fruits and seeds.



22) Write about the elements of Xylem.

Answer : Xylem:

- (i) Xylem is a conducting tissue which conducts water, mineral nutrients upward from root to leaves.
- (ii) Xylem is composed of different kinds of elements. They are (1) xylem tracheids (2) xylem fibres (3) xylem vessels and (4) xylem parenchyma

(1) Xylem tracheids

- (i) They are elongated or tube-like dead cells with hard, thick and lignified walls.
- (ii) Their ends are tapering, blunt or chisel-like and devoid of protoplast. They have large lumen without any content.
- (iii) Their function is conduction of water and providing mechanical support to the plant.

(2) Xylem fibres

- (i) These cells are elongated, lignified and pointed at both the ends.
- (ii) Xylem fibres help in conduction of water and nutrients from root to the leaf and also provide mechanical support to the plant.

(3) Xylem vessels

- (i) They are long cylindrical, tube like structures with lignified walls and wide central lumen.
- (ii) These cells are dead as these do not have protoplast.
- (iii) They are arranged in longitudinal series in which the partitioned walls (transverse walls) are perforated, and so the entire structure looks-like a water pipe.
- (iv) Their main function is transport of water and minerals from root to leaf, and also to provide mechanical strength.

(4) Xylem parenchyma

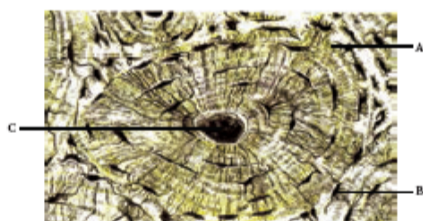
Its cells are living and thin walled. The main function of xylem parenchyma is to store starch and fatty substances.

- 23) List out the differences between mitosis and meiosis.

Answer :

Mitosis	Meiosis
Occurs in somatic cells.	Occurs in reproductive cells.
Involved in growth and occurs continuously throughout life.	Involved in gamete formation only during the reproductively active age.
Consists of single division.	Consists of two divisions.
Two diploid daughter cells are formed.	Four haploid daughter cells are formed.
The chromosome number in the daughter cell is similar to the parent cell (2n).	The chromosome number in the daughter cell is just half (n) of the parent cell.
Identical daughter cells are formed.	Daughter cells are not similar to the parent cell and are randomly assorted.

- 24) Identify the figure given below



- (a) Label the parts a, b and c
- (b) What is the chemical composition of the tissue?
- (c) What is the function of c?

Answer : (a) T.S.of Bone

- (i) Lamellae
- (ii) Lacunae
- (iii) Central (Haversian canal)

(b) The matrix of the bone is rich in calcium salts and collagen fibres which gives the bone its strength.

(c) c - Haversian canal

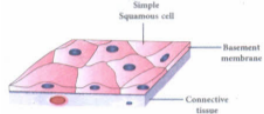
They surround the blood vessels and nerve cells throughout the bone and communicate with bone cells in the bone matrix through connections called canaliculi

- 25) Explain simple epithelium and its types.

Answer : Simple Epithelium:

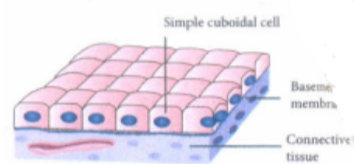
1. It is formed of single layer of cells. It forms a lining for the body cavities and ducts.
2. On the basis of structural modification of the cells, simple epithelium is further divided into following types.
 - (i) Squamous epithelium
 - (ii) Cuboidal epithelium
 - (iii) Columnar epithelium
 - (iv) Ciliated epithelium
 - (v) Glandular epithelium

(i) Squamous epithelium



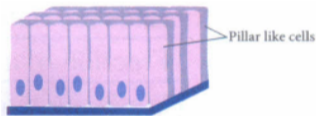
1. It is made up of thin, flat cells with prominent nuclei. These cells have irregular boundaries and bind with neighbouring cells
2. The squamous epithelium is also known as pavement membrane, which form delicate lining of the buccal cavity, alveoli of lungs, proximal tubule of kidneys, blood vessels etc
3. It protects the body from mechanical injury, drying and invasion of germs
4. It also helps in filtration by forming a selectively permeable merm surface.

(ii) Cuboidal epithelium



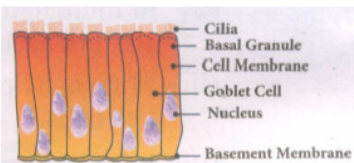
1. It is composed of single layer of cubical cells.
2. The nucleus is round and lies in the centre.
3. This tissue is present in the thyroid vesicles, salivary glands, sweat glands, exocrine pancreas etc.
4. Their main function is secretion and absorption.

(iii) Columnar epithelium



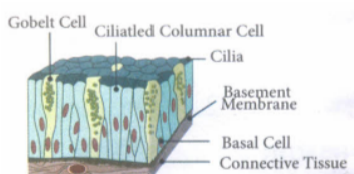
1. It is composed of a single layer of slender, elongated and pillar like cells.
2. Their nuclei are located at the base.
3. It is found lining the stomach, gall bladder, bile duct, small intestine, colon, oviducts etc.,
4. They are mainly involved in secretion and absorption.

(iv) Ciliated epithelium



1. Certain columnar cells bear numerous delicate hair like out growths called cilia and are called ciliated epithelium.
2. Their function is to move particles or mucus in a specific direction over the epithelium.
3. It is seen in the trachea of wind-pipe, bronchioles of respiratory tract, kidney tubules and fallopian tubes of oviducts.

(v) Glandular epithelium



1. Epithelial cells are often modified to form specialized gland cells which secrete chemical substances at the epithelial surface.
2. Sometimes a portion of the epithelial tissue folds inward to form a multicellular gland, which lines the gastric glands, pancreatic tubules and intestinal gland