

Chapter Test – Biology Class IX

Duration – 3 Hours

Max Marks – 65 Marks

Chapters :

1) The fundamental unit of life

2) Tissues

3) Improvement in food resources

Section – A (01 marks each)

- 1. Name to organelles in a plant cell that contain their own genetic material.**
Plastids and mitochondria

- 2. Which type of cell division is required for:**
 - a) Grown and repair of body – Mitosis cell division**
 - b) Formation of gametes. – Meiosis cell division**

- 3. Name the tissue which forms the lining of blood vessels.**
Epithelial Tissue Cells

- 4. State one problem associated with composite fish culture.**
 - i) Fish eggs are eaten by other fishes...
 - ii) If one fish gets affected by any disease, it will be spread among other fishes too...

- 5. Lysosomes are known as the suicide bags of the cell. Give reason.**
It bursts to eat a dead cell.
A lysosome is a organelle of cell. It is filled with enzymes that can digest things. When a cell is about to die, lysosome bursts to eat up the dead cell leaving space for new cells to come.

- 6. Mentioned to ways which crop variety can be improved.**
 - (i) Hybridization
 - (ii) Genetic modification

- 7. Which tissue makes up the husk of coconut?**
Sclerenchyma Tissue.

- 8. Name two structure found in animal cells but not in plant cells**
Lysosomes and centrioles

- 9. Which organelle is involved in the formation of lysosomes?**
Golgi apparatus.

- 10. Water hyacinth floats on water surface. Explain.**
Aerenchyma present in the swollen petiole provides buoyancy to the hyacinth. Thus, it floats on water surface.

- 11. Which tissue forms a barrier to keep different body systems separate?**
Epithelial tissue.

- 12. Name the water conducting tissue generally present in gymnosperms.**
Tracheids.

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13. Which tissues in plants provide them flexibility?

Collenchyma

14. Name the tissue responsible for movement in our body.

Muscular Tissue.

15. Which structure protects the plant body against the invasion of parasites?

The epidermis has thick cuticles and waxy substances to prevent the invasion of parasites.

16. What are genetically modified crops?

Generally modified crops are those crops which have been improved by introducing a gene that would provide the desired characteristics.

17. What are weeds? Give examples?

Weeds are unwanted plants in the cultivated fields. Examples – Xanthium (Gokhroo)

18. Which organelle is associated with ribosomes formation?

Nucleolus.

19. Plasma membrane is made up of which two components?

Lipids and Proteins.

20. What are fodder crops? Give examples.

Crops that are grown as food for livestock are called as fodder crops. Examples- Berseem, Oats and Sudan grass.

Section – B (02 marks each)

21. What are the consequences of the following conditions? Give Reason.

a) A cell having low water concentration than the surrounding medium.

The water from the high concentration (surrounding) will enter the cell.
The cell will swell.

b) A cell having high water concentration than surrounding medium.

The water will from the higher concentration (of the cell) will move to lower concentration (surrounding). The cell will shrink.

c) A cell having equal water concentration to its surrounding medium.

The cell will remain unaffected.

22. Describe the structure of mitochondria with a neat labelled diagram.

They are made of two membranes. The outer membrane covers the organelle and contains it like a skin. The inner membrane folds over many times and creates layered **structures** called cristae. The fluid contained in the **mitochondria** is called the matrix.

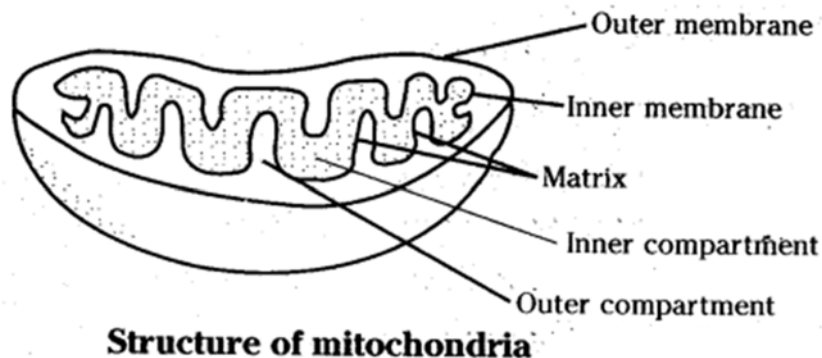
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23. What is cell sap? Give its composition.

Liquid content in the vacuoles of plant cell is called cell sap. The cell sap contains sugar, amino acids, proteins, minerals and metabolic wastes.

24. State the different functions of endoplasmic reticulum.

- (i) Forms the skeletal framework.
- (ii) Active transport of cellular materials.
- (iii) Metabolic activities due to presence of different enzymes.
- (iv) Provides increased surface area for cellular reactions.
- (v) Formation of nuclear membrane during cell division.

25. What is green manure?

Prior to sowing of desired crop seeds, some plants like sun hemp or guar are grown and then mulched by ploughing them into the soil. These green plants thus turn into green manure which helps in enriching the soil in nitrogen and phosphorous.

26. List the two types of food requirements of dairy animals.

- 1) Roughage which largely consist of fibre
- 2) Concentrates which have high level of protein and other nutrients but low-fibre

27. Why is the epidermis present as thick waxy coating of cutin in desert plants?

A thick waxy coating of cutin is present in desert plants to prevent excessive loss of water during transpiration. Due to this, plants can survive in scarcity of water in deserts.

28. What is cytosol and cytoskeleton?

Cytosol is the semifluid part of the cell cytoplasm which is embedded in between cell organelles.

Cytoskeleton is a network of proteins fibres present in the cell which provides a supporting framework for the organelles.

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29. What precautions would you take while preparing a stained temporary mount of onion peel cell

1. Overstaining and under staining should be avoided.
2. Folding of the peel should be avoided.
3. Clean and dry glass slide and coverslip should be used.
4. Coverslip should be put carefully avoiding any air bubbles.

30. What would happen if the plasma membrane ruptures or break down?

If the plasma membrane ruptures or breaks down, the constant internal composition of the cell will be lost and the cell will not be able to perform its basic functions. The intracellular contents will leak out and such a cell with ruptured plasma membrane would get killed.

31. What are the constituents of phloem?

Phloem is made up of four types of elements:

- i) Sieve tubes
- ii) Companion cells
- iii) Phloem fibres
- iv) Phloem parenchyma.

32. What is lignin and cutin?

Lignin : Lignin is a chemical substance present in the cell wall of the plants which acts as a cement and hardens it.

Cutin : Cutin is a chemical substances with water proofing quality covering the aerial parts of plants.

33. Name the different components of xylem.

Four types of elements make up the xylem tissue. (i) Tracheids, (ii) Vessel, (iii) Xylem parenchyma and (iv) Xylem Fibres. The only living component of xylem is xylem parenchyma.

34. What are involuntary muscles? Where are they found?

The muscles which do not move on our will are called involuntary muscles. The movement of food in the alimentary canal or the contraction and relaxation of blood vessels are involuntary movements. These muscles are also called as smooth muscles. They are also found in the iris of the eye, in ureters and in the bronchi of the lungs.

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35. Who proposed cell theory? What it states? What modifications Virchow made in it?

Cell theory was proposed by German Botanist Schleiden and German Zoologist Schwann. This theory states that Cell is the basic unit of life. This theory was proposed in 1838-39.

Later, Virchow, in 1855 added that all cells arise from pre - existing cells.

Section – C (03 marks each)

36. What is mixed cropping? Give one example. How it helps the farmers?

The process in which two or more different types of crops are sown in the field and the same time is known as mixed cropping.

For **example**, wheat, gram and mustard are grown as **mixed** rabi crops in dry regions of Northern India.

It has various advantages like, it increases the productivity of the land of the farmer, the rearing of livestock and crop production complement each other and maintain the balance, the farmers can keep their land in continuous production.

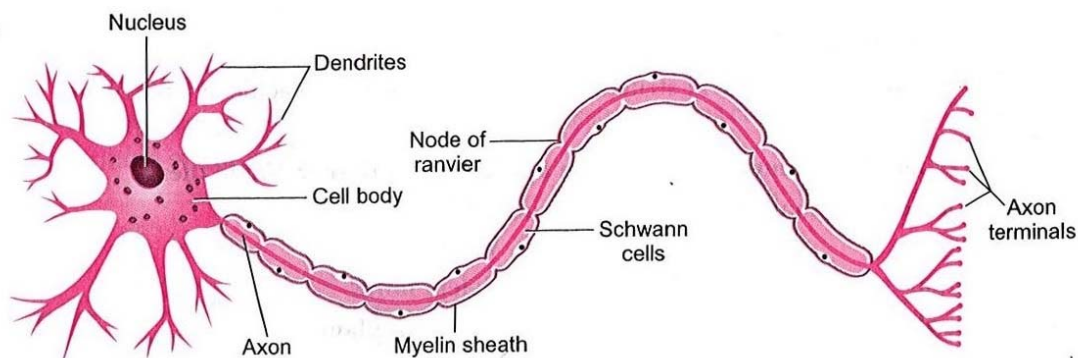
37. List any three desirable characters of bee varieties suitable for honey production.

Desirable characteristics of a bee-keeping are:

- a) Good honey collection capacity
- b) Ability to protect itself from enemies
- c) Prolific queen production with less swarming

38. Draw a neat and well labeled diagram of neuron. What part of our body is composed of nervous tissue?

Ans.



39. Give any three distinguishing characters of collenchyma and parenchyma.

Characteristics of Collenchyma:

- a) It consists of living cells
- b) The cells contain cytoplasm
- c) Its cell wall is cellulose
- d) It provides mechanical support and elasticity to the plant body.

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Characteristics of parenchyma:

- a) These are living cells
- b) Cells are thin walled and unspecialized
- c) Cells are usually loosely packed with large intercellular spaces
- d) Stores nutrients and water in stem and root.

40. Describe any three functions of the Golgi apparatus.

- a) It is involved in the transport and modification of proteins, lipids as well as carbohydrates.
- b) It helps in the formation of cell plate during cell division.
- c) It is also involved in the formation of cell wall and plasma membrane lysosomes.
- d) The material synthesized near endoplasmic reticulum is packaged and dispatched to various targets and outside the cell through the Golgi apparatus.

41. Name the following:

- a) **Epithelial tissue containing thin, flat, irregular cells**
Squamous Epithelium
- b) **Epithelial tissue found in the ducts of salivary glands**
CUBOIDAL EPITHELIUM.
- c) **Epithelial tissue present in glands such as the thyroid and pituitary glands.**
Glandular epithelium

42. Give three features of the cardiac muscles.

- a) Cardiac muscles are involuntary
- b) Cardiac muscle cells are cylindrical, branched and uninucleate
- c) Cardiac muscles show rhythmic contraction and relaxation.

43. What are the functions of areolar tissue?

- a) It acts as a supporting and packing tissue between organs lying in the body cavity.
- b) It helps in repair of tissue after an injury.
- c) It also helps in combating foreign toxins
- d) It fixes skin to underlying muscles.

44. What would happen to the life of a cell if there were no Golgi apparatus?

- a) If there were no Golgi apparatus, the material synthesized by the endoplasmic reticulum would not be carried to the various parts inside and outside of the cell.
- b) Also as the Golgi apparatus performs the function of storage and modification of the material synthesized in the cell, these material could not be stored and modified further.
- c) Moreover, there will be no production of lysosomes which will cause the accumulation of waste material, viz., worn out and dead cell organelles within the cell which ultimately lead to cell death.

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45. Why xylem and phloem are called complex tissues? How are they different from one other?

Xylem and phloem are called as complex tissues as they are made up of more than one type of cells.

	Xylem	Phloem
1	Xylem consist of dead cells. (Except Xylem parenchyma)	Phloem consists of living cells. (Except Phloem fibre)
2	It conduct water and minerals from roots to aerial parts of the plant	It translocate prepared food from leaves to storage organs and growing parts of the body.

Section – D (05 marks each)**46. What is meant by osmosis? What happens to a cell when it is placed in hypotonic and hypertonic solutions respectively? State two points of differences between osmosis and diffusion.**

Osmosis: The diffusion of water or solvent through a semi-permeable membrane from a solution of lower concentration of solutes to a solution of higher concentration of solutes is called osmosis.

When a cell is placed into a hypotonic solution it will cause the cell to swell and in some cases even burst. ... When a cell is placed into a hypertonic solution the cell will tend to shrink or even shrivel due to the loss of water.

Diffusion	Osmosis
1. It occurs in any medium.	1. It occurs in liquid medium only.
2. Diffusing molecules may be solid, liquid or gaseous solutes.	2. It involves movement of solvent molecules only.
3. Semipermeable membrane is not required.	3. Semipermeable membrane is required.

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47. Explain any three functions of epidermis. What changes takes place in the epidermis as the plant grows older.

Functions of Epidermis in plants:

- a) Protect the plant from water loss in transpiration
- b) It acts as boundary tissue surrounding the plant
- c) Exchange of gases through the stomata
- d) Storage of water and metabolic products

As plants grow older, a strip of secondary meristem replaces the epidermis of the stem. Cells on the outside are cut off from this layer. This forms the several layer thick cork or the bark of the tree.

As plants grow older, a strip of secondary meristem replaces the epidermis of the stem.

48. (a) List six factors for which the variety improvement of crops is aimed at?

(b) Explain two advantages of inter cropping.

(a) Some of the factors for which crop variety improvement is done are:

- (i) Higher yield
- (ii) Improved quality
- (iii) Biotic and Abiotic resistance
- (iv) Change in Maturity duration
- (v) Wider Adaptability
- (vi) Desirable agronomic characteristics.

(b) The advantages of inter cropping are-

- (i) The crops are selected such that their nutrient requirements are different. This ensures maximum utilization of the nutrient supplied.
- (ii) It prevents pests and diseases from spreading to all the plants belonging to one crop in a field. This way, both the crops can give better returns.

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49. (a) Explain the two ways of incorporating desirable character into crop varieties.

- (i) The first method is hybridization. In this process, two genetically different crops or plants are crossed to come up with a new and unique variety of crop.
- (ii) The second method is to induce genetically transformed crops. This can be done by introducing a gene with the characteristics you desire to improve the variety, and bring in, a different species altogether.

(b) Mention any two such desirable characters to be seen in a variety for selection.

Desirable characteristics can be incorporated in a crop variety by two methods:

- (i) **Hybridization.** This is a genetically technique. This method involves crossing of the selected plants having one or more of the desirable characteristics and getting the desired results.
- (ii) **Genetic engineering.** Introduction of desirable characteristic with the help of techniques available in biotechnology. It is more advanced level.

50. Differentiate between:

(a) Tendons and Ligaments (b) Apical meristem and lateral meristem.

Ligament	Tendon
1. Ligament helps in connecting bone to bone.	1. Tendon helps in connecting bone to muscles.
2. It is elastic and flexible.	2. It is strong and non-flexible.

Apical Meristems	Lateral Meristems
Occurs at the tips of roots and shoots	Occurs at the cambium
Adds vertical growth to roots and shoots (increase length)	Adds lateral growth to stem (increase width)
Responsible for primary growth	Responsible for secondary growth
Develops into primary xylem and phloem	Produces secondary xylem and phloem
Produces new leaves and flowers	Produces the bark on trees

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51. Describe the types of connective tissue along with their functions.

There are five types of connective tissues:

- (i) **Areolar connective tissue:** It is a loose and cellular connective tissue. It joins skin to muscles, fills spaces inside organs, and is found around muscles, blood vessels and nerves.

Functions:

- (a) It acts as a supporting and packing tissue between organs lying in the body cavity.
- (b) It helps in repair of tissues after an injury.
- (c) It also helps in combating foreign toxins.
- (d) It fixes skin to underlying muscles.

- (ii) **Dense regular connective tissue:** It is a fibrous connective tissue, characterised by ordered and densely packed collection of fibres and cells. Dense regular connective tissue is the principal component of tendons and ligaments.

Functions:

- (a) **Tendons:** Tendons are cord-like, strong, inelastic structures that join skeletal muscles to bones.

- (b) **Ligament:** They are an elastic structure which connects bones to bones.

- (iii) **Adipose tissue:** Adipose tissue is basically an aggregation of fat cells. The adipose tissue is abundant below the skin, between the internal organs and in the yellow bone marrow.

Functions:

- (a) It serves as a fat reservoir.
- (b) It provides shape to the limbs and the body.
- (c) It keeps visceral organs in position.
- (d) It forms shock-absorbing cushions around kidneys and eyeballs.
- (e) It acts as an insulator. Being a poor conductor of heat, it reduces heat loss from body, *i.e.*, it regulates body temperature.

- (iv) **Skeletal tissue:** The skeletal or supporting tissue includes bone and cartilage which form the endoskeleton of vertebrate body.

- (a) **Cartilage:** The cartilage is a specialised connective tissue which is compact and less vascular. Cartilage can be found in ear pinna, nose tip, epiglottis, intervertebral discs, end of long bones, lower ends of ribs and rings of trachea.

- (b) **Bone:** Bone is a strong and non-flexible tissue. Like cartilage, bone is also a specialised connective tissue.

Functions:

- (a) Cartilage provides support and flexibility to the body parts. It smoothens the surface at joints.

- (b) Bone provides shape and skeletal support to body.

- (c) Bone protects vital body organs such as brain, lungs, etc.

- (d) Bone anchors the muscles.

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(v) **Fluid connective tissue:** Fluid connective tissue links the different parts of the body and maintains continuity in the body. It includes blood and lymph.

(a) **Blood:** In this tissue, cells move in a fluid or liquid matrix or medium called blood plasma. Blood occurs in blood vessels called arteries, veins, and capillaries which are connected together to form the circulatory system.

(b) **Lymph:** Lymph is a colourless fluid that has been filtered out of the blood capillaries.

Functions:

(a) Blood transports nutrients, hormones and vitamins to the tissues and transports excretory products from the tissues to the liver and kidney.

(b) Lymph transports the nutrients (oxygen, glucose) that may have filtered out of the blood capillaries back into the heart to be recirculated in the body.

(c) Lymph brings CO₂ and nitrogenous wastes from tissues to the blood.

52. What is a permanent tissue? Classify permanent tissue and describe them.

Permanent tissues are derived from meristematic tissue but their cells have lost the power of division and have attained their definite forms.

Permanent tissues are classified into the following two types:

(i) Simple permanent tissue

(ii) Complex permanent tissue

(i) **Simple permanent tissues:** These tissues are composed of cells which are structurally and functionally similar.

Simple permanent tissues are further classified into the following three types:

(a) **Parenchyma:** Parenchyma forms the bulk of the plant body. Parenchyma cells are living and possess the power of division.

(b) **Collenchyma:** Collenchyma tissue is also living. It is characterised by the deposition of extra cellulose at the corners of the cells.

(c) **Sclerenchyma:** Sclerenchyma cells are dead cells and they are devoid of protoplasm. The cell walls of sclerenchyma are largely thickened with deposition of lignin.

(ii) **Complex permanent tissues:** The complex tissues consist of more than one type of cells having a common origin. All these cells coordinate to perform a common function.

Complex tissues are of the following two types:

(a) **Xylem:** Xylem is a vascular and mechanical tissue. It is a conducting tissue. Xylem is composed of four different types of cells: (i) Tracheids (ii) Vessels (iii) Xylem parenchyma (iv) Xylem sclerenchyma.

Except xylem parenchyma, all other xylem elements are dead and bounded by thick lignified walls.

(b) **Phloem:** Like xylem, phloem is also vascular but has no mechanical function. Phloem is composed of following four elements: (i) Sieve tubes (ii) Companion cells (iii) Phloem parenchyma (iv) Phloem fibres.

Except phloem fibres, all other phloem elements are living.

Xylem and phloem are both conducting tissues and are also known as vascular tissues. Together, both of them constitute vascular bundle.

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53. Write short note on epithelial tissue and their functions.

The covering or protective tissue in the animal body are epithelial tissues. Epithelial tissue cells are tightly packed and form a continuous sheet. They have only a small amount of cementing material between them and almost no intercellular spaces. Epithelium covers most organs and cavities within the body. It forms a barrier to keep different body systems separate. The skin, the lining of the mouth, the lining of blood vessels, lung alveoli and kidney tubules are all made of epithelial tissue.

Functions of epithelial tissue:

- (i) Epithelial cells protect the underlying cells from drying, injury and chemical effects. They also protect the body from viral or bacterial infections.
- (ii) It helps in the absorption of water and nutrients.
- (iii) It performs secretory function by secreting useful chemicals like sweat, saliva, enzymes from the food, etc., in the body.