NAAHAR PUBLIC SCHOOL(CBSE) SENIOR SECONDARY,
AYYUR AGARAM, VILLUPURAM
A.Y. 2022-2023, NOVEMBER MONTHLY TEST, Answer key

CLASS: XI, Time :**1hour 30 mins**
Sub: BIOLOGY Max. Marks :**50**
Tr. Initial: MHR / ATCHAYA Date: 16.11.2022

SECTION – A (10 marks)

I. Multiple choice questions. (10 x ½ = 5)

1. Gymnosperms are also called soft wood spermatophytes because they lack
a) Xylem vessels b) Phloem fibres c) Cambium d) Thick-walled tracheids
2. Phloem in gymnosperms lacks
a) Sieve tubes only b) Companion cells only
c) Albuminous cells and sieve cells **d) Both sieve tubes and companion cells**
3. Regeneration of damaged growing grass following grazing is largely due to
a) Intercalary meristem b) Lateral meristem c) Secondary meristem d) Apical meristem
4. Chlorenchyma is known to develop in the
a) Spore capsule of a moss b) Mycelium of a green mould such as Aspergillus
c) Cytoplasm of Chlorella d) Pollen tube of Pinus
5. Which of the following statements regarding mitochondrial membrane is not correct?
a) The inner membrane is highly convoluted forming a series of infoldings
b) The enzymes of the electron transport chain are embedded in the outer membrane
c) The outer membrane is permeable to all kinds of molecules
d) The outer membrane resembles a sieve that
6. Which one of the following is not a constituent of the cell membrane?
a) Cholesterol b) Phospholipids c) Glycolipids **d) Proline**
7. Which structures perform the function of mitochondria in bacteria?
a) Mesosomes b) Ribosomes c) Cell wall d) Nucleoid
8. Which of the following structures between two adjacent cells is an effective transport pathway?
a) Plasmalemma b) Endoplasmic reticulum c) Plastoquinones **d) Plasmodesmata**
9. The opening of rectum in frog is called
a) vestibule **b) cloca** c) coccyx d) none of the above
10. One of the main function of frog's skin is
a) Diffusion of respiratory gases
b) Absorbtion of UV rays to produce vitamin D
c) Storage of excess food in the form of subcutaneous fat
d) Excretion of nitrogenous waste in the form of uric acid
11. Directions: In the following questions, a statement of assertion is followed by a statement of reason. Mark the correct choice as: (5x1=5)
(a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
(b) If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
(c) If Assertion is true but Reason is false.
(d) If both Assertion and Reason are false.

i. Assertion : Apical meristem of root is subterminal.
Reason: At the terminal end of root, root cap is present
Ans: (a) Root apical meristem is subterminal because of the presence of a protective terminal root cap over it.

ii. Assertion : In angiosperms, the conduction of water is more efficient because their xylem has vessels.
Reason : Conduction of water by vessel elements is an active process with energy supplied by xylem parenchyma rich in mitochondria.
Ans: d) Xylem is the water conducting tissue. It consists of living cells like parenchyma and dead cells like tracheary elements.

iii. Assertion: Frog has short alimentary canal.
Reason: Frogs are carnivores.
Ans: (a) The digestive system of frog consists of alimentary canal and digestive gland. Alimentary canal of frog is short because frogs are carnivores. Carnivores have shorter digestive tracts as meat is easier to digest than plant material.

iv. Assertion: Lysosomes are capable of digesting carbohydrates, proteins, lipids and nucleic acids.
Reason: Lysosomes are rich in hydrolytic enzymes like lipases, proteases and carbohydrases.
Ans: (a) Lysosomes are single membrane bound small vesicles containing hydrolytic enzymes in the form of minute crystalline or semicrystalline granules of 0.5-0.8 mm. The important enzymes are acid phosphatases, sulphatases, proteases, peptidases, nucleases, lipases and carbohydrases. They are also called acid hydrolases because these digestive enzymes usually function in acidic medium with a pH of 4-5. These enzymes are capable of digesting carbohydrates, proteins, lipids and nucleic acids. Lysosomes are also called suicidal bags because of the presence of a large number of digestive enzymes or acid hydrolases in them which can cause cell lysis if a lysosome is burst.

v. Assertion: The number of mitochondria in a cell corresponds to the function of the cell. Reason: Mitochondria are common to both plant and animal cells.
Ans: (d) Several functions of cell are carried out by mitochondria i.e. ATP synthesis, aerobic respiration, maternal inheritance etc.

SECTION – B (40 marks)

II. Answer in brief. (5x2=10)

12. **What are the differences between lenticels and stomata?**

Ans:

Stomata	Lenticels
Minute pores found on the epidermis of the leaves.	Pores present on the tree trunk or the stem of the plant.
The opening and closing of stomata can be regulated.	The lenticels are always open.
These possess guard cells.	These do not possess guard cells.
They facilitate transpiration and exchange of gases.	These are only responsible for the exchange of gases.
Active during the day.	Active during the night.
The stomatal guard cells contain chlorophyll that helps in photosynthesis.	Lenticels cannot photosynthesize
A large amount of water vapour is emitted through the stomata.	A small amount of water vapour is released through the lenticels.
Not found in roots and fruits.	Found in roots and fruits

13. How are growth rings in a tree trunk formed? What is its importance?

Ans: **The growth rings are concentric rings, also known as annual rings. Secondary growth gives rise to these rings. Secondary growth occurs due to the activity of meristematic tissue, cambium. By counting these rings, one can determine the age of the tree.**

14. Name and explain the two modes of respiration in adult frog.

Ans: The amphibian has two modes of respiration – cutaneous respiration and pulmonary respiration. In an aquatic ecosystem, the skin is the respiratory organs where the diffusion of dissolved oxygen takes place. This is called cutaneous respiration. While on land, they use both skin and lungs for respiration. During pulmonary respiration, air entering through nostrils passes to the lungs via the buccal cavity. But during summer and winter sleep, they use only skin for respiration.

15. **What is the significance of vacuole in a plant cell?**

Ans: The vacuole is the primary storage organelle of a cell. In the plant cell, this organelle plays a primary role in storing water, food and other essential minerals required for their cellular activities.

16. What is the fluid mosaic model of the plasma membrane?

Ans: The fluid mosaic model was proposed by Singer and Nicholson. It explains the structures and functions of various cell membranes. According to this model, the protein molecules are embedded in the lipid bilayer. This lipid bilayer gives elasticity and fluidity to the cell membrane

III. Answer in brief. (5x3=15)

17. (i) How are the vascular bundles arranged?

Ans: The vascular bundles are scattered in the ground tissue.

(ii) How are the xylem vessels arranged in each bundle? What do you call such an arrangement?

Ans: Xylem vessels are 'Y' shaped. The big metaxylem vessels with pitted thickening from the arms, of Y. Protoxylem, occupies the lower arm of Y and is composed of spiral thickening.But the vascular bundles are conjoint, collateral, closed and Endarch.

(iii) Vascular bundles are closed ones. What type of tissue is lacking in them?

Ans: Cambium is absent.

18. Distinguish between the following:

(a) Exarch and endarch **condition of protoxylem**

(b) Protoxylem and metaxylem

(c) Open and closed vascular bundles

Ans: (a) Exarch and endarch **condition of protoxylem: In stems, the protoxylem lies towards the centre (pith) and the metaxylem lies towards the periphery of the organ. This type of primary xylem is called endarch. In roots, the protoxylem lies towards periphery and metaxylem lies towards the centre. Such arrangement of primary xylem is called exarch.**

(b) Protoxylem and metaxylem: Primary xylem is of two types— protoxylem and metaxylem. The first formed primary xylem elements are called protoxylem and the later formed primary xylem is called metaxylem.

(c) Open and closed vascular bundles: In dicotyledonous stems, cambium is present between phloem and xylem. Such vascular bundles because of the presence of cambium possess the ability to form secondary xylem and phloem tissues, and hence are called open vascular bundles. In the monocotyledons, the vascular bundles have no cambium present in them. Hence, since they do not form secondary tissues they are referred to as closed.

19. What is the interaction of frog with mankind? Give 3 points.

Ans: Frogs eat up insects and thus, protect the crop.

Frogs are largely used as experimental material for teaching and research.

The muscular legs of the frog are largely used as food by man in some parts of India and many other countries.

20. Describe the functions of the three organelles, viz Golgi bodies, chloroplasts, and mitochondria.

Ans:

(a) Functions of Golgi bodies:

1. Carbohydrate synthesis of mucopolysaccharides
2. Formation of acrosome
3. Formation of the lysosome.
4. Formation of the plasma membrane.
5. Formation of the cell wall.
6. Absorption of compounds.
7. Production of hormones.
8. Formation of pigments.
9. Yolk deposition.

(b) Functions of chloroplast:

1. Their main function is to trap the sun's energy and to convert it into the chemical energy of food by photosynthesis.
2. Storage of starch,
3. Chloroplasts in fruits and flowers change into chromoplasts.

(c) Functions of Mitochondria:

1. Powerhouses the cell and stores energy as ATP.
2. Several respiratory enzymes are found in mitochondria.
3. DNA is also contained in mitochondria.
4. They regulate the concentration of calcium ions in the cells.

21. Give six examples of specific functions performed by varied cells.

Ans:

1. Nerve cells are specialized to transmit nerve impulses.
2. Muscle cells are specialized for contraction.
3. Cells of the pancreas for secretion of insulin.
4. Red blood cells for the transport of oxygen.
5. White blood cells help the body fight infection and other diseases.
6. Stem cells provide new cells for the body as it grows, and replace specialised cells that are damaged or lost.

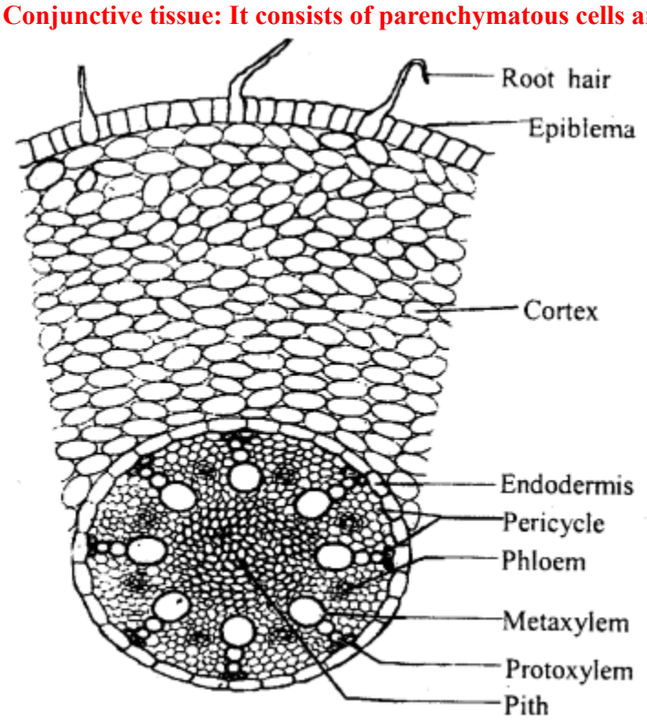
IV. Answer in brief. (3x5=15)

22. Describe briefly the internal structure of the monocot root with the help of a labelled diagram.

Answer:

A transverse section of the monocot root shows the following issues.

1. It is composed of a single layer of compactly arranged thin-walled cells without intercellular spaces and cuticle. It bears many unicellular root hair.
2. Cortex: It is present beneath the epidermis. It consists of 15-20 layers of parenchymatous cells with large intercellular spaces.
3. Endodermis: It is the innermost layer of the cortex. Its cells are barrel-shaped with Casparian strips on their anticlinal walls. The passage cells are seen just opposite the protoxylem ends.
4. Pericycle: It consists of a single layer of thin-walled parenchymatous cells.
5. Vascular bundle: The vascular bundles are radial and the xylem is exarch. The xylem and phloem bundles are always more than six.
6. Pith: It occupies the central portion of the stele and is made up of parenchymatous cells.
7. Conjunctive tissue: It consists of parenchymatous cells and is found between the xylem and phloem strands.



T.S. of a typical monocot root

23. Multicellular organisms have better survival chances than their unicellular counterparts. Why?

Ans: Division of labor: Some organisms are made up of just one cell (Amoeba, Paramecium, Chlamydomonas, etc.) These are termed unicellular organisms. In these organisms, all the vital life activities are performed within a single cell.

On the other hand, most organisms are formed by many cells.The size of these organisms is also big. In these multicellular organisms, all the body cells do not perform all the vital activities of life. The multicellular organisms have an advantage over unicellular organisms because in these organisms cells play a more specialized role in life activities.

For example in multicellular animals some cells of the body perform the function of movement (muscle cells), some perform the function of digestion or respiration or the removal of the wastes from the body. A group of specific types of cells performs only some limited functions.

Similarly in higher plants, some of the cells perform protective functions (epidermal cells) some cells perform the function of transport of water, mineral, and food substance in the body (xylem and phloem).These cells would perform other functions except for which they are specialized. The group of similar cells performing similar functions is termed tissues.

This system is very advantageous to multicellular organisms. Because the work has been divided by the cells of the body. This is called the division of labor. Due to this division of labor among the cells all the vital activities in the body of an organism function in a coordinated way.

24. Frogs can live both on land and in freshwater and belong to class Amphibia of phylum Chordata. The most common species of frog found in India is Rana tigrina. Frogs do not have constant body temperature as their body temperature varies with the temperature of the environment. Such animals are called cold blooded or poikilotherms. Frogs have the ability to change the colour to hide them from their enemies (camouflage). This protective coloration is called mimicry. Frogs are not seen during peak summer and winter. During this period they take shelter in deep burrows to protect them from extreme heat and cold. This is known as summer sleep (aestivation) and winter sleep (hibernation) respectively.
The skin of frog is smooth and slippery due to the presence of mucus. The skin is always maintained in a moist condition. The colour of dorsal side of body is generally olive green with dark irregular spots. On the ventral side the skin is uniformly pale yellow. The frog never drinks water but absorb it through the skin. Body of a frog is divisible into head and trunk. A neck and tail are absent. Above the mouth, a pair of nostrils is present. Eyes are bulged and covered by a nictitating membrane that protects them while in water.
On either side of eyes a membranous tympanum (ear) receives sound signals. The forelimbs and hind limbs help in swimming, walking, leaping and burrowing. The hind limbs end in five digits and they are larger and muscular than fore limbs that end in four digits. Feet have webbed digits that help in swimming. Frogs exhibit sexual dimorphism. Male frogs can be distinguished by the presence of sound producing vocal sacs and also a copulatory pad on the first digit of the fore limbs which are absent in female frogs.

1.) Frogs eyes are generally covered by _____ which is protective in function.

a) Camouflage membrane
b) Copulatory membrane
c) Nictitating membrane
d) Tympanum membrane

2.) _____ is the unique and distinguishing as well as sexual character of male frog.

a) Presence of webbed digits
b) Presence of copulatory pad
c) Presence of Nictitating membrane
d) Presence of membranous tympanum

3.) What is mean by poikilotherms? Animal in which body temperature varies with the variation in temperature of the environment those animals are called as poikilotherms. Such animals are also called as cold blooded animal.

4.) Why Frogs are not seen during peak summer and winter? During this period they take shelter in deep burrows to protect them from extreme heat and cold. This is known as summer sleep (aestivation) and winter sleep (hibernation) respectively.

5.) What is mean by camouflage and mimicry? The ability to change the colour to hide them from the enemies this is referred as camouflage, this protective coloration is called as mimicry.