	INDIAN SCHOOL AL WADI AL KABIR	
Class: XI **SUBJECT: BIOLOGY**	**Department: SCIENCE 2023-24** BIOLOGY	**Date of submission: 23.11.2023**
Worksheet 2 with answers	**CHAPTER: Anatomy of Flowering Plants**	**Note:** **A4 FILE FORMAT**
NAME OF THE STUDENT	**CLASS & SEC:**	**ROLL NO.**

MULTIPLE CHOICE QUESTIONS

Q.1) Gymnosperms lack vessels in their _____.

(a) Xylem

(b) Phloem parenchyma

Q.2) Autumn wood has ____

(a) light color

(b) high density

(c) active cambium.

(d) higher number of xylary elements

Q.3) Vascular bundles in which cambium is present and possess the ability to form secondary xylem and phloem tissues are called

(a) open vascular bundles

(b) closed vascular bundles

(c) Radial vascular system

(d) Conjoint vascular system

Q.4) Initiation of lateral roots and vascular cambium during the secondary growth takes place in

(a) Endodermis

(b) Casparian strips

(c) Pericycle

d) Conjuctive tissue

Q.5) Primary meristem is composed of

(a) Apical meristems and intercalary meristem

(b) Fascicular vascular cambium and intercalary meristem

(c) Interfascicular cambium and cork-cambium

(d) Apical meristems and cork-cambium

Assertion and Reasoning Questions

a.) Both Assertion and Reason are correct, and Reason is the correct explanation for Assertion.

b.) Both Assertion and Reason are correct, and Reason is not the correct explanation for Assertion.

c.) If assertion is true but the reason is false.

d.) if both assertion and reason are false.

Q.6) Assertion: Sclerenchyma is the supporting tissue in plants composed of cellulose, hemicellulose, and lignin.

Reason: Sclerenchyma provides the main structural support to a plant.

a.) Both Assertion and Reason are correct, and Reason is the correct explanation for Assertion.

b.) Both Assertion and Reason are correct, and Reason is not the correct explanation for Assertion.

c.) If assertion is true but the reason is false.

d.) if both assertion and reason are false.

Q.7) Assertion: During the formation of leaves and elongation of stem, some cells 'left behind' from shoot apical meristem, constitute the lateral bud.

Reason: Such buds are present in the internode of stem and can form a flower

a) Both Assertion and Reason are correct, and Reason is the correct explanation for Assertion.

b.) Both Assertion and Reason are correct, and Reason is not the correct explanation for Assertion.

c.) If assertion is true but the reason is false.

d.) If both assertion and reason are false.

Q.8) Fascicular vascular cambium, interfascicular cambium and cork-cambium are examples of

(a) Apical meristem

(b) Intercalary meristem

(c) Primary meristem

(d) Lateral meristem

Q.9) The stem continues to increase in _____due to the activity of vascular cambium, the outer cortical and epidermis layers

(a) Length

(b) Girth

(c) Volume

(d) Surface area

Q.10.) Cork cambium is also known as _____

a.) phellogen

b.) phellem

c.) phelloderm

d.) periderm

SHORT ANSWER TYPE QUESTIONS

Q.11 What is secondary growth?

Q.12) What is the composition of conjunctive tissue in dicot roots?

Q.13) Give the function of Heartwood and sapwood respectively?

Q.14) What are lenticels? What is its function?

Q.15) What is protophloem and meta phloem?

Q.16) What are the components of epidermal tissue system

Q.17) What is the location of stomata in plant and state its function?

Q.18) What is stele made up of in dicot roots?

LONG ANSWER TYPE QUESTIONS

Q.19) What is tissue? State the different type of tissues in plant cells.

Q.20) What is the key difference between spring wood and autumn wood?

Q.21) Distinguish between monocot and dicot roots

Q.22) Explain in brief the anatomy of Monocotyledonous Leaf.

CASE STUDY #1

Epidermal cells are parenchymatous with a small amount of cytoplasm lining the cell wall and a large vacuole. The outside of the epidermis is often covered with a waxy thick layer called the cuticle which prevents the loss of water. Cuticle is absent in roots. Stomata are structures present in the epidermis of leaves. Stomata regulate the process of transpiration and gaseous exchange. Each stoma is composed of two bean shaped cells known as guard cells which enclose stomatal pore. In grasses, the guard cells are dumb-bell shaped. The outer walls of guard cells are thin and the inner walls are highly thickened. The guard cells possess chloroplasts and regulate the opening and closing of stomata. Sometimes, a few epidermal cells, in the vicinity of the guard cells become specialised in their shape and size and are known as subsidiary cells. The stomatal aperture, guard cells and the surrounding subsidiary cells are together called stomatal apparatus.

The cells of epidermis bear a number of hairs. The root hairs are unicellular elongations of the epidermal cells and help absorb water and minerals from the soil. On the stem the epidermal hairs are called trichomes. The trichomes in the shoot system are usually multicellular. They may be branched or unbranched

and soft or stiff. They may even be secretory. The trichomes help in preventing water loss due to transpiration.

1.) Which of the following cell regulates the opening and closing of guard cell.

a.) Epidermal cell

b.) Guard cell

c.) Subsidiary cell

d.) Trichomes

2.) Which of the following components are known as epidermal appendages.

a.) Trichomes

b.) Hairs

c.) Trichomes & Hairs

d.) Stomata

3.) Define cuticles and give its function.

4.) What is trichomes?

5.) Write short note on stomata?

ANSWERS

1) (a) Xylem

2)(d) higher number of xylary elements

3)(a) open vascular bundles

4) (c) Pericycle

5) (a) Apical meristems and intercalary meristems

6) a.) Both Assertion and Reason are correct, and Reason is the correct explanation for Assertion.

7) d.) If both assertion and reason are false.

8) (d) Lateral meristem

9) (b) Girth

10)a.) phellogen

SHORT ANSWER TYPE QUESTION

Ans11. The girth of most dicotyledonous plants increases which is referred to as secondary growth. The two lateral meristems, vascular cambium and cork cambium, are engaged in secondary growth.

Ans12. Conjunctive tissue is made up of parenchymatous cells that reside between the xylem and the phloem.

Ans13. Heartwood mainly provides mechanical support to the plants whereas sapwood is involved in conduction of water

Ans14. Lenticels are parenchymatous cells that rupture the epidermis in the phellogen, generating lens-shaped pore. Lenticels allow gases to be exchanged with the atmosphere and the stem's internal tissue.

Ans15. Protophloem is the first created primary phloem, which has tiny sieve tubes, and meta phloem is the second formed primary phloem, which has larger sieve tubes.

Ans16. Epidermal cells, stomata, and epidermal appendages like as trichomes and hairs make up the epidermal tissue system, which covers the entire plant body.

Ans17. The epidermis of leaves has pores or openings called stomata. The process of transpiration and gas exchange is regulated by stomata.

Ans18. The stele is made up of all tissues on the inner side of the endodermis, such as the pericycle, vascular bundles, and pith.

LONG ANSWER TYPE QUESTIONS

Ans. 19.) A tissue is a collection of cells that possess a same origin and typically execute the same function. Different types of tissues make up a plant. Tissues are divided into two categories: meristematic and permanent tissues, based on whether the cells forming them are capable of dividing.

Ans. 20.) Spring wood, also known as early wood, is formed during this season. Cambium is particularly active in the spring season, producing a significant number of xylem components possessing wide vessels. Spring wood has low density and light color. Autumn wood or late wood is formed when the cambium is less active in the winter and produces fewer xylem elements with thin and narrow vessels.

Ans21. The following characteristics can be used to distinguish if it is a monocot, or a dicot Roots:

Monocot roots	Dicot roots
Pith is large and well developed.	The pith is small or inconspicuous.
Plant roots have a root-like structure that is considerably broader and fibrous.	The tap root-like structure of plant roots is fairly thin.
They have large number of xylem tissue	They have large number of xylem tissue
No secondary growth is seen in monocot roots	Secondary growth is seen in dicot roots.

Ans.22

1) Monocotyledonous leaves are also called isobilateral leaves.

2.) The epidermis has stomata on both surfaces, and the mesophyll does not divide into palisade and spongy parenchyma.

3.) Certain adaxial epidermal cells along veins in grasses transform into huge, empty, colorless cells known as Bulliform cells.

4.) The leaf surface is exposed when the bulliform cells in the leaves have absorbed water and are turgid.

5.) They curl the leaves inwards to reduce water loss when they are flaccid due to water stress.

6.) Monocot leaves have parallel venation which is represented in the near comparable diameters of vascular bundles (except in major veins).

Answer key For Case Study

1.) b

2.) c

3.) Cuticle – The outside of the epidermis is often covered with a waxy thick layer called the cuticle.

Function of cuticle –prevents the loss of water.

4.) The cells of epidermis bear several hairs. Epidermal hairs present on the stem are called as trichomes.

5.) Stomata are structures present in the epidermis of leaves. Stomata regulate the process of transpiration and gaseous exchange. Each stoma is composed of two bean shaped cells known as guard cells which enclose stomatal pore. In grasses, the guard cells are dumbbell shaped. The outer walls of guard cells are thin, and the inner walls are highly thickened. The guard cells possess chloroplasts and regulate the opening and closing of stomata. Sometimes, a few epidermal cells, in the vicinity of the guard cells become specialized in their shape and size and are known as subsidiary cells. The stomatal aperture, guard cells and the surrounding subsidiary cells are together called stomatal apparatus. (Draw diagram).

PREPARED BY Ms ARUNIMA NAIR	CHECKED BY HoD SCIENCE