

DEVELOPMENTAL ANATOMY AND PALYNOLOGY

SEM 2 INTERNAL 1

I.MCQS

1. The quiescent center is present in the:

- A) Leaf apex
- B) Root apex
- C) Stem node
- D) Cambium

Answer: B) Root apex

2. The quiescent center was proposed by:

- A) Haberlandt
- B) Clowes
- C) Strasburger
- D) Bower

Answer: B) Clowes

3. The outermost tissue of the root apex is:

- A) Pericycle
- B) Cortex
- C) Epidermis
- D) Root cap

Answer: D) Root cap

4. The shoot apical meristem is responsible for:

- A) Secondary growth
- B) Primary growth
- C) Guttation
- D) Respiration

Answer: B) Primary growth

5. Tunica-carpus organization is found in:

- A) Root apex
- B) Leaf lamina
- C) Shoot apex
- D) Cortex

Answer: C) Shoot apex

6. The tunica mainly divides in:

- A) Random planes
- B) Periclinal planes
- C) Anticlinal planes
- D) Diagonal planes

Answer: C) Anticlinal planes

7. Kranz anatomy is characteristic of:

- A) CAM plants
- B) C₃ plants
- C) C₄ plants
- D) Bryophytes

Answer: C) C₄ plants

8. Bundle sheath cells are prominent in:

- A) C₃ leaves
- B) C₄ leaves
- C) Moss leaves
- D) Fern leaves

Answer: B) C₄ leaves

9. CAM plants open stomata mainly during:

- A) Noon
- B) Morning

C) Night

D) Afternoon

Answer: C) Night

10. The epidermis originates from:

A) Procambium

B) Ground meristem

C) Protoderm

D) Pericycle

Answer: C) Protoderm

11. Guard cells are associated with:

A) Hydathodes

B) Stomata

C) Trichomes

D) Lenticles

Answer: B) Stomata

12. Anisocytic stomata are characterized by:

A) Two subsidiary cells

B) Three unequal subsidiary cells

C) No subsidiary cells

D) Parallel subsidiary cells

Answer: B) Three unequal subsidiary cells

13. Paracytic stomata possess subsidiary cells:

A) Parallel to guard cells

B) Perpendicular to guard cells

C) Circular around guard cells

D) Absent

Answer: A) Parallel to guard cells

14. Diacytic stomata have subsidiary cells:

- A) Parallel to pore
- B) At right angles to pore
- C) Unequal in size
- D) Absent

Answer: B) At right angles to pore

15. Trichomes are outgrowths of:

- A) Cortex
- B) Epidermis
- C) Xylem
- D) Pith

Answer: B) Epidermis

16. Xylem mainly conducts:

- A) Food
- B) Hormones
- C) Water and minerals
- D) Proteins

Answer: C) Water and minerals

17. Phloem transports:

- A) Water only
- B) Minerals only
- C) Organic food materials
- D) Oxygen

Answer: C) Organic food materials

18. The main conducting element of angiosperm xylem is:

- A) Sieve tube
- B) Vessel

C) Companion cell

D) Cortex

Answer: B) Vessel

19. Companion cells are associated with:

A) Xylem vessels

B) Tracheids

C) Sieve tube elements

D) Fibres

Answer: C) Sieve tube elements

20. Ultrastructure of xylem and phloem is studied using:

A) Light microscope

B) Hand lens

C) Electron microscope

D) Compound lens only

Answer: C) Electron microscope

II. FILL IN THE BLANKS

1. The region of low mitotic activity in the root apex is called the..... **Quiescent center.**

2. The outermost protective tissue of young roots is the **Epidermis.**

3. **Root cap**..... protects the delicate apical meristem of the root.

4. The actively dividing tissue in plants is known as **Meristematic tissue.**

5. **Shoot apex**..... gives rise to leaves and branches.

6. In C4 plants, bundle sheath cells form the characteristic **Kranz anatomy.**

7. **CAM** plants open their stomata mainly during the night.

8. The tiny pores present in epidermis for gaseous exchange are called **Stomata.**

9. **Guard cells** regulate the opening and closing of stomata.

10. **Trichomes** are outgrowths arising from the epidermis.

11. The arrangement of subsidiary cells around guard cells is used in **stomatal classification**.
12. **Anisocytic stomata** are surrounded by three subsidiary cells.
13. The conducting tissue responsible for water transport is **Xylem**.
14. Food conduction in plants takes place through **Phloem**.
15. Xylem vessels are mainly composed of **lignified walls**.
16. Companion cells are associated with sieve tubes in **phloem**.
17. The study of tissue development is called **Histogenesis**.
18. The shoot apical meristem is responsible for **primary growth**.
19. The root apex is covered by the **root cap**.
20. The epidermal cells are usually covered with a waxy layer called **cuticle**.

III. DESCRIPTIVE QUESTIONS

1. Structure with reference to C₃ and C₄ plants
2. Organization of root apex and significance of Quiescent center
3. Structure and classification of Trichomes
4. Kranz and CAM syndrome
5. Ultra structure of Xylem