A-LEVEL

Multiple-choice questions on the Anatomy of Flowering Plants

1. Question: Which tissue in plants is responsible for providing mechanical support and is often lignified?

A. Parenchyma
B. Collenchyma
C. Sclerenchyma
D. Epidermis

Answer: C. Sclerenchyma
Explanation: Sclerenchyma cells have thick,

lignified cell walls that provide mechanical support to plant tissues.

2. **Question:** What is the primary function of trichomes in plant epidermis?

A. Photosynthesis
B. Protection
C. Water absorption
D. Nutrient storage

Answer: B. Protection
Explanation: Trichomes on plant surfaces protect against herbivores and reduce water loss.

3. Question: In which plant organ does secondary growth primarily occur?

A. Root
B. Stem
C. Leaf
D. Flower

Answer: B. Stem
Explanation: Secondary growth, involving the

formation of secondary tissues, occurs mainly in the stem.

4. Question: What is the primary function of cork cambium in woody plants?

A. Photosynthesis
B. Gas exchange
C. Lignin deposition
D. Formation of protective tissue

Answer: D. Formation of protective tissue
Explanation: Cork cambium produces cork cells that form the protective outer bark.

5. Question: Which part of a leaf regulates water loss through small pores?

A. Cuticle
B. Stomata
C. Epidermis
D. Mesophyll

Answer: B. Stomata
Explanation: Stomata are small pores in the leaf epidermis that regulate gas exchange and water loss.

6. Question: What is the main function of xylem vessels in plants?

A. Translocation of sugars
B. Water and mineral transport
C. Support
D. Gas exchange

Answer: B. Water and mineral transport
Explanation: Xylem vessels are specialized for the upward transport of water and minerals.

7. Question: The phloem is responsible for the transport of:

A. Water and minerals
B. Sugars and organic nutrients
C. Oxygen and carbon dioxide
D. Hormones

Answer: B. Sugars and organic nutrients
Explanation: Phloem is responsible for the translocation of sugars and other organic nutrients.

8. Question: What is the primary function of the endodermis in plant roots?

A. Water and nutrient absorption
B. Protection against pathogens
C. Regulating gas exchange
D. Controlling water movement into the vascular cylinder

Answer: D. Controlling water movement into the vascular cylinder
Explanation: The endodermis regulates water movement into the vascular cylinder by controlling the passage of water and ions.

9. Question: In which plant tissue would you find companion cells?

A. Xylem
B. Phloem
C. Epidermis
D. Parenchyma

Answer: B. Phloem
Explanation: Companion cells are associated with sieve tube elements in the phloem and play a role in loading and unloading sugars.

10. Question: What is the primary function of pericycle cells in roots?

A. Water absorption
B. Nutrient storage
C. Lateral root formation
D. Photosynthesis

Answer: C. Lateral root formation
Explanation: Pericycle cells give rise to lateral roots in plants.

11. Question: What is the purpose of the Casparian strip in the endodermis?

A. Water absorption
B. Nutrient transport
C. Gas exchange
D. Regulation of solute entry into the vascular cylinder

Answer: D. Regulation of solute entry into the vascular cylinder
Explanation: The Casparian strip blocks the apoplastic pathway, regulating the entry of solutes into the vascular cylinder.

12. Question: The zone of cell division in plant roots includes:

A. Root cap and meristematic cells
B. Zone of elongation
C. Zone of maturation
D. All of the above

Answer: A. Root cap and meristematic cells
Explanation: The zone of cell division includes the root cap and actively dividing meristematic cells.

13. Question: Which plant structure is responsible for the transport of sugars from mature leaves to other parts of the plant?

A. Xylem
B. Phloem
C. Cambium
D. Parenchyma

Answer: B. Phloem
Explanation: The phloem is responsible for the translocation of sugars from source to sink tissues.

14. Question: What is the primary function of root hairs?

A. Water absorption
B. Mechanical support
C. Photosynthesis
D. Nutrient storage

Answer: A. Water absorption
Explanation: Root hairs increase the surface area for water and nutrient absorption in roots.

15. Question: The primary growth in plants is mainly a result of the activity of:

A. Apical meristem
B. Lateral meristem
C. Vascular cambium
D. Cork cambium

Answer: A. Apical meristem
Explanation: Apical meristems are responsible for primary growth, lengthening of roots and shoots.

16. Question: Which tissue is responsible for the formation of new cells in plants?

A. Epidermis
B. Parenchyma
C. Meristem
D. Sclerenchyma

Answer: C. Meristem
Explanation: Meristematic tissues are regions of active cell division and growth.

17. Question: The bundle sheath in leaves is associated with:

A. Xylem
B. Phloem
C. Mesophyll
D. Epidermis

Answer: C. Mesophyll
Explanation: The bundle sheath surrounds the vascular bundles in leaves, providing support and playing a role in photosynthesis.

18. Question: What is the primary function of the pith in plant stems?

A. Water transport
B. Mechanical support
C. Nutrient storage
D. Gas exchange

Answer: C. Nutrient storage
Explanation: The pith stores nutrients in the central region of the stem.

19. Question: Vascular bundles in dicot stems are typically arranged in a:

A. Ring
B. Scattered pattern
C. Collateral arrangement
D. Centrarch arrangement

Answer: A. Ring
Explanation: In dicot stems, vascular bundles are arranged in a ring.

20. Question: The intercalary meristem is typically found in:

A. Roots
B. Stems

C. Leaves
D. Root tips

Answer: B. Stems
Explanation: Intercalary meristems are found in the internodes of stems and are involved in stem elongation.

21. Question: Which structure protects the developing shoot tip in plants?

A. Axillary bud
B. Terminal bud
C. Leaf primordium
D. Apical meristem

Answer: B. Terminal bud
Explanation: The terminal bud protects the developing shoot tip and is involved in apical dominance.

22. Question: What is the main function of the periderm in older woody stems?

A. Water transport
B. Gas exchange

C. Protection
D. Photosynthesis

Answer: C. Protection
Explanation: Periderm replaces the epidermis in older stems, providing protection and preventing water loss.

23. Question: The process of secondary growth involves the activity of:

A. Apical meristem
B. Lateral meristem
C. Vascular cambium
D. Epidermal cells

Answer: C. Vascular cambium
Explanation: Secondary growth involves the activity of lateral meristems, primarily the vascular cambium.

24. Question: Which cell type in the phloem lacks a nucleus at maturity?

A. Sieve tube element
B. Companion cell

C. Phloem fiber
D. Parenchyma cell

Answer: A. Sieve tube element
Explanation: Sieve tube elements lack a nucleus at maturity, allowing for efficient transport of nutrients.

25. Question: The function of root pressure in plants is primarily related to:

A. Water and nutrient absorption
B. Translocation of sugars
C. Lateral root formation
D. Support

Answer: A. Water and nutrient absorption
Explanation: Root pressure helps in the uptake of water and nutrients from the soil.

26. Question: What is the role of lenticels in plant stems?

A. Water absorption
B. Gas exchange

C. Nutrient storage
D. Mechanical support

Answer: B. Gas exchange
Explanation: Lenticels are small openings in the bark that facilitate gas exchange in stems.

27. Question: The vascular cambium gives rise to:

A. Xylem and phloem
B. Epidermis
C. Collenchyma
D. Parenchyma

Answer: A. Xylem and phloem
Explanation: Vascular cambium is responsible for the production of secondary xylem and phloem.

28. Question: What is the primary function of the endosperm in seeds?

A. Nutrient storage
B. Protection
C. Germination
D. Photosynthesis

Answer: A. Nutrient storage
Explanation: Endosperm stores nutrients to support the germination of the seed.

29. Question: Which part of the plant is responsible for transpiration?

A. Root hairs
B. Leaves
C. Stems
D. Flowers

Answer: B. Leaves
Explanation: Transpiration primarily occurs through stomata on the surfaces of leaves.

30. Question: The vascular bundle in monocot stems is typically:

A. Scattered
B. Arranged in a ring
C. Collateral
D. Centrarch

Answer: A. Scattered
Explanation: In monocot stems, vascular bundles are scattered throughout the ground tissue.

31. Question: What is the primary function of the root cap in plant roots?

A. Nutrient absorption
B. Protection of apical meristem
C. Gas exchange
D. Photosynthesis

Answer: B. Protection of apical meristem
Explanation: The root cap protects the apical meristem as it pushes through the soil during root growth.

32. Question: The region of a stem where leaves are attached is known as:

A. Node
B. Internode
C. Axil
D. Bud

Answer: A. Node
Explanation: Nodes are the regions of a stem where leaves, branches, or buds are attached.

33. Question: What is the main function of the cuticle on the leaf surface?

A. Gas exchange
B. Water absorption
C. Protection against pathogens
D. Nutrient transport

Answer: C. Protection against pathogens
Explanation: The cuticle provides a protective layer on the leaf surface, reducing water loss and protecting against pathogens.

34. Question: The vascular tissue in roots is typically organized into:

A. Vascular bundles
B. Vascular cambium
C. Phloem fibers
D. Xylem vessels

Answer: A. Vascular bundles
Explanation: Vascular bundles in roots contain both xylem and phloem tissues.

35. Question: What is the primary function of the shoot apical meristem?

A. Root elongation
B. Leaf development
C. Stem elongation
D. Flower formation

Answer: C. Stem elongation
Explanation: The shoot apical meristem is responsible for the elongation of stems.

36. Question: The transfer cells in plants are specialized for:

A. Water absorption
B. Nutrient transport
C. Gas exchange
D. Mechanical support

Answer: B. Nutrient transport
Explanation: Transfer cells facilitate the movement

of nutrients, especially in regions of active absorption.

37. Question: What is the role of root nodules in leguminous plants?

A. Water absorption
B. Nitrogen fixation
C. Photosynthesis
D. Protection against pathogens

Answer: B. Nitrogen fixation
Explanation: Root nodules contain nitrogen-fixing bacteria that convert atmospheric nitrogen into a form usable by plants.

38. Question: The pericycle is associated with the formation of:

A. Lateral roots
B. Stomata
C. Vascular bundles
D. Vascular cambium

Answer: A. Lateral roots
Explanation: Pericycle cells give rise to lateral roots in plants.

39. Question: The term "heartwood" in trees refers to:

A. The innermost layer of xylem
B. The outermost layer of bark
C. The actively dividing region of stems
D. The region of older, non-conducting xylem

Answer: D. The region of older, non-conducting xylem
Explanation: Heartwood is the central, non-living part of older trees, providing structural support.

40. Question: Which part of a seed functions as a protective coat?

A. Cotyledon
B. Endosperm
C. Seed coat