

Anatomy of Flowering Plants

- Assertion (A):** Within angiosperms, the monocots and dicots show difference in their internal structure.

Reason (R): Both monocots and dicots show diverse environmental adaptations.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false
- Assertion (A):** Both apical and intercalary meristems are primary meristem.

Reason (R): They appear early in life of plant and contribute to the formation of primary plant body.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false
- Assertion (A):** Simple permanent tissues are homogenous tissue.

Reason (R): Simple permanent tissue is made up of cells similar in structure and function.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false
- Assertion (A):** Pits are present on cell wall of sclerenchyma.

Reason (R): Sclerenchymatous cells show deposition of lignin in discontinuous manner.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false
- Assertion (A):** Xylem is conducting as well as mechanical tissue.

Reason (R): Xylem helps in transportation of water, minerals and show deposition of lignin on wall of their constituents.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false
- Assertion (A):** Both tracheids and vessels are devoid of protoplasm.

Reason (R): Both tracheids and vessels have to produce physical forces for ascent of sap so death of protoplasm is prerequisite.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false
- Assertion (A):** Ontogenically tracheids are unicellular and vessels are multicellular.

Reason (R): Tracheids are made up of single cell while vessel is made up of several vessel elements.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false
- Assertion (A):** companion cells are essential for functioning of sieve tubes.

Reason (R): The companion cells help in maintaining the pressure gradient in sieve tubes.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false



9. **Assertion (A):** Epidermal stem hairs are of multicellular nature.

Reason (R): They are of absorptive nature.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false

10. **Assertion (A):** Ground tissue system is the fundamental tissue system of plant body.

Reason (R): Majority of the plant body is consisted of ground tissue system.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false

11. **Assertion (A):** In roots vascular bundles show radial arrangement of xylem and phloem.

Reason (R): In roots arrangement of xylem and phloem on different radii facilitates absorption process.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false

12. **Assertion (A):** The tangential as well as radial walls of the endodermal cells have a deposition of impermeable suberin.

Reason (R): Endodermis is the biological check point where entry and exit of useful substances is governed.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false

13. **Assertion (A):** Stem branches are exogenous in origin.

Reason (R): Stem branches arise from pericycle.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false

14. **Assertion (A):** Vascular cambium of dicot stem shows dual origin.

Reason (R): Partially it is made up of primary meristem and partially from secondary meristem.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false

15. **Assertion (A):** Old woody plant parts are devoid of primary phloem.

Reason (R): Primary phloem get crushed due to continuous formation and accumulation of secondary xylem & secondary phloem.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false

16. **Assertion (A):** In autumn wood xylary elements are more and having wider cavity.

Reason (R): In autumn wood there is less deposition of lignin on xylary elements.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false

17. **Assertion (A):** Annual rings do not provide accurate estimation of age of plants.

Reason (R): Sometimes false annual rings can also arise due to mechanical pressure and jerks.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false

18. **Assertion (A):** Number of sap wood cells remain constant, while of heart wood gradually increases.

Reason (R): Heart wood arises earlier than sap wood.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false

19. **Assertion (A):** Cork is impervious to water.

Reason (R): It shows deposition of suberin on cell membrane.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false

20. **Assertion (A):** Although lenticels are involved in gaseous exchange yet they do not found on leaves.

Reason (R): Lenticels are result of secondary growth while leaves do not show secondary growth.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false

21. **Assertion (A):** Vascular cambium ring of roots is circular from beginning.

Reason (R): Cambium ring of roots arise from continuous pericycle ring from their same face.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false

22. **Assertion (A):** Cotton fibres are not true fibres.

Reason (R): Cotton fibres are not lignified.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false

23. **Assertion (A):** Most distinct annual rings are formed in tropical regions

Reason (R): Climatic variations are sharp in tropical regions

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false

24. **Assertion (A):** In a hollow stem no vital function is affected.

Reason (R): In hollow stem heart wood is perish out and heart wood do not perform any vital function

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false

- 25. Assertion (A):** Mature sieve tube element is enucleated.
Reason (R): At maturity, nucleus is absent in sieve tube element.
 (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
 (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
 (3) (A) is true but (R) is false
 (4) Both (A) and (R) are false
- 26. Assertion (A):** Periderm includes cork, secondary cortex and cork cambium.
Reason (R): Periderm is formed due to activity of vascular cambium.
 (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
 (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
 (3) (A) is true but (R) is false
 (4) Both (A) and (R) are false
- 27. Assertion (A):** Commercial cork obtained from *Quercus suber* is a dead tissue with thickened walls by the deposition of suberin
Reason (R): Dendrochronology is the determination of age of a tree by counting the annual rings.
 (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
 (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
 (3) (A) is true but (R) is false
 (4) Both (A) and (R) are false
- 28. Assertion (A):** In dicot stem, endodermis is also referred to as the starch sheath.
Reason (R): The cells of endodermis are rich in starch grains.
 (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
 (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
 (3) (A) is true but (R) is false
 (4) Both (A) and (R) are false

- 29. Assertion (A):** In root primary xylem is of exarch nature.
Reason (R): In roots their main function is water absorption and due to their thin wall protoxylem is more efficient than metaxylem.
 (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
 (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
 (3) (A) is true but (R) is false
 (4) Both (A) and (R) are false
- 30. Assertion (A):** Guard cells of stomata are having thick and elastic cell wall.
Reason (R): Elastic wall is due to radial arrangement of cellulose microfibrils.
 (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
 (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
 (3) (A) is true but (R) is false
 (4) Both (A) and (R) are false
- 31. Assertion (A):** Suberization leads to death of cell.
Reason (R): Suberin is water resistant material.
 (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
 (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
 (3) (A) is true but (R) is false
 (4) Both (A) and (R) are false
- 32. Assertion (A):** Monocots do not form secondary tissues.
Reason (R): The vascular bundles have no cambium present in them.
 (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
 (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
 (3) (A) is true but (R) is false
 (4) Both (A) and (R) are false



- 33. Assertion (A):** Secondary growth takes place in dicot stems but not in monocot stems.
- Reason (R):** Hypodermis is collenchymatous in dicot stems while it is sclerenchymatous in monocot stems.
- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false

- 34. Assertion (A):** Many environmental scientists believe amphibians, including frogs, are good biological indicators of broader ecosystem health.
- Reason (R):** These organisms have intermediate positions in food chains, have permeable skins, and typically biphasic lives (aquatic larvae and terrestrial adults).
- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false

Directions: In the following questions, a statement of assertion is followed by a statement of reason. Mark the correct choice as:

- (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.

35. **Assertion:** Higher plants have meristematic regions for indefinite growth.
Reason : Higher plants have root and shoot apices.

36. **Assertion:** Apical and intercalary meristems contribute to the growth in length, while the lateral meristems cause increase in girth in maize.
Reason: Apical and intercalary meristems always increase the height of plants.

37. **Assertion:** A simple tissue is made of only one type of cells.
Reason: Various simple tissues in plants are parenchyma, collenchyma and sclerenchyma.

38. **Assertion:** Sclerenchyma consists of long narrow cells with thick lignified cell walls.
Reason: They are usually dead and without protoplasm.

39. **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.

40 **Assertion :** In collateral vascular bundles, phloem is situated towards inner side.
Reason : In monocot stem, cambium is present.

41. **Assertion:** Pith is large and well developed in monocots.

Reason: Monocot root do not undergo any secondary growth.

42. **Assertion:** The two cotyledons in seed are embryonic leaves.

Reason: The embryo contains radicle and plumule.

43. **Assertion:** Bulliform cells are useful in the unrolling of leaf.

Reason: Bulliform leaves store water.

44. **Assertion:** Heartwood the greater part of secondary xylem, is lighter in colour and consists of dead elements with highly lignified walls.

Reason: The peripheral region of the secondary xylem is dark brown in colour and is called sapwood.

45. **Assertion:** Sapwood is less durable than the heartwood.

Reason: Hollow tree trunks are due to the disappearance of sapwood.

46. **Assertion:** Growth rings are also called as annual rings.

Reason: Generally growth ring is formed in each year.

47. **Assertion:** All tissues lying inside vascular cambium are called as bark.

Reason: Bark is made up of phellogen, phellem and phelloderm lying inside secondary phloem.

48. **Assertion:** Epidermal cells have small amount of cytoplasm and a large vacuole.

Reason: Guard cells are dumb bell shaped in dicots and bean shaped in monocots.

49. **Assertion:** Annual rings do not occur in dicot trees growing on sea shore.

Reason: There is little climate variation.

ANSWER KEY

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Ans.	2	1	1	1	1	1	1	1	3	1	1	1	3	1	1	4	1	3	1	1
Que.	21	22	23	24	25	26	27	28	29	30	31	32	33	34						
Ans.	4	1	4	1	1	3	2	1	1	1	1	1	2	1						

35.	36.	37.	38.	39.	40.	41.	42.	43.	44.	45.	46.	47.	48.	49.		
a	d	b	a	d	d	b	b	b	d	c	c	d	c	a		