

DPP - Daily Practice Problems

Chapter-wise Sheets

Date :

Start Time :

End Time :

BIOLOGY

CB06

SYLLABUS : Anatomy of Flowering Plants

Max. Marks : 180

Marking Scheme : + 4 for correct & (–1) for incorrect

Time : 60 min.

INSTRUCTIONS : This Daily Practice Problem Sheet contains 45 MCQs. For each question only one option is correct. Darken the correct circle/ bubble in the Response Grid provided on each page.

1. During formation of leaves and elongation of stem, some cells 'left behind' from the shoot apical meristem, constitute ____
(a) Lateral meristem (b) Axillary bud
(c) Cork cambium (d) Fascicular cambium
2. Function of companion cells is
(a) providing energy to sieve elements for active transport.
(b) providing water to phloem.
(c) loading of sucrose into sieve elements by passive transport.
(d) loading of sucrose into sieve elements.
3. The cork cambium, cork and secondary cortex are collectively called
(a) phelloderm (b) phellogen
(c) periderm (d) phellem
4. Which of the following does not have stomata ?
(a) Hydrophytes (b) Mesophytes
(c) Xerophytes (d) Submerged hydrophytes
5. The chief water conducting elements of xylem in gymnosperms are :
(a) vessels (b) fibres
(c) transfusion tissue (d) tracheids
6. Which is correct about transport or conduction of substances?
(a) Organic food moves up through phloem.
(b) Organic food moves up through phloem
(c) Inorganic food moves upwardly and downwardly through xylem
(d) Organic food moves upwardly and downwardly through phloem

RESPONSE GRID

1. (a)(b)(c)(d)
6. (a)(b)(c)(d)

2. (a)(b)(c)(d)

3. (a)(b)(c)(d)

4. (a)(b)(c)(d)

5. (a)(b)(c)(d)

Space for Rough Work

7. A narrow layer of thin walled cells found between phloem/ bark and wood of a dicot is
(a) cork cambium (b) vascular cambium
(c) endodermis (d) pericycle
8. Which of the following statements is true?
(a) Vessels are multicellular with narrow lumen.
(b) Tracheids are multicellular with narrow lumen.
(c) Vessels are unicellular with wide lumen.
(d) Tracheids are unicellular with wide lumen.
9. The quiescent centre in root meristem serves as a
(a) site for storage of food which is utilized during maturation.
(b) reservoir of growth hormones.
(c) reserve for replenishment of damaged cells of the meristem.
(d) region for absorption of water.
10. Root hair arises from
(a) pericycle (b) endodermis
(c) cortex (d) epiblema
11. Phellogen and phellem respectively denote
(a) cork and cork cambium
(b) cork cambium and cork
(c) secondary cortex and cork
(d) cork and secondary cortex
12. The common bottle cork is a product of :
(a) Dermatogen (b) Phellogen
(c) Xylem (d) Vascular cambium
13. A vascular bundle in which the protoxylem is pointing to the periphery is called
(a) endarch (b) exarch
(c) radial (d) closed
14. Which of the following does not have stomata?
(a) Hydrophytes
(b) Mesophytes
(c) Xerophytes
(d) Submerged hydrophytes
15. Collenchyma differs from parenchyma in having
(a) living protoplasm
(b) cellulose walls
(c) vacuoles
(d) pectin deposits at corners
16. Which of the following plant shows multiple epidermis?
(a) *Croton* (b) *Allium*
(c) *Nerium* (d) *Cucurbita*
17. Epidermis is absent in
(a) root tip and shoot tip (b) shoot bud and floral bud
(c) ovule and seed (d) petiole and pedicel
18. Which of the following layer is present nearest of plasma membrane in plant cell?
(a) Secondary wall (b) Middle lamella
(c) Primary wall (d) Tonoplast
19. Which one of the following statement is false?
(i) Epidermal cell has small amount of cytoplasm and a large vacuole.
(ii) Waxy cuticle layer is absent in roots.
(iii) Root hairs are unicellular, while stem hairs / trichomes are multicellular.
(iv) Trichomes may be branched or unbranched, soft or stiff and prevent transpiration.
(v) Guard cells are dumbbell shaped in dicots and bean-shaped in monocots.
(a) (i) only (b) (iv) only
(c) (iii) only (d) (v) only
20. Which option is true about heart wood/duramen?
(i) It does not help in water and mineral conduction.
(ii) It is dark coloured but soft.
(iii) It has tracheary elements filled with tannins, resins, gums, oil, etc.
(iv) It is a peripheral part.
(v) Sensitive to microbes and insects, hence least durable.
(a) (i) and (iii) (b) (ii) and (iii)
(c) (iv) and (v) (d) (iii) and (iv)

RESPONSE
GRID

7. (a)(b)(c)(d)

8. (a)(b)(c)(d)

9. (a)(b)(c)(d)

10. (a)(b)(c)(d)

11. (a)(b)(c)(d)

12. (a)(b)(c)(d)

13. (a)(b)(c)(d)

14. (a)(b)(c)(d)

15. (a)(b)(c)(d)

16. (a)(b)(c)(d)

17. (a)(b)(c)(d)

18. (a)(b)(c)(d)

19. (a)(b)(c)(d)

20. (a)(b)(c)(d)

Space for Rough Work

21. In land plants, the guard cells differ from other epidermal cells in having
 (a) cytoskeleton (b) mitochondria
 (c) endoplasmic reticulum (d) chloroplasts
22. Which of the following statement(s) is/are true?
 (i) Uneven thickening of cell wall is characteristic of sclerenchyma.
 (ii) Periblem forms cortex of the stem and the root.
 (iii) Tracheids are the chief water transporting elements in gymnosperms.
 (iv) Companion cell is devoid of nucleus at maturity.
 (v) The Commercial cork is obtained from *Quercus suber*.
 (a) (i) and (iv) only (b) (ii) and (v) only
 (c) (iii) and (iv) only (d) (ii), (iii) and (v) only
23. In endarch condition of xylem, protoxylem lies _____ of metaxylem.
 (a) on inner side
 (b) on outer side
 (c) both on inner and outer side
 (d) in centre
24. Y-shaped arrangement of xylem vessels is found in
 (a) monocot stem (b) dicot stem
 (c) monocot root (d) dicot root
25. Study carefully the following statements and select the incorrect one(s).
 (i) Lateral roots develop from pericycle.
 (ii) Endodermis is the innermost layer of cortex.
 (iii) Sap wood is the central, dark coloured, non-conducting part of secondary xylem
 (a) (i) and (ii) (b) (ii) and (iii)
 (c) (i) only (d) (iii) only
26. Removed parts of grasses by the grazing herbivores are regenerated fast by
 (a) Both apical and intercalary meristems
 (b) Lateral meristems only
 (c) Secondary meristems
 (d) Intercalary meristems
27. Which of the following statement for early wood is correct?
 (a) Xylary elements having narrow vessels
 (b) Darker with higher density
 (c) Lighter in colour and has high density
 (d) Having vessels with wider cavities
28. Choose correct option w.r.t origin and position of meristem responsible for the regeneration of parts removed by the grazing herbivores.

	Origin	Position
(a)	Secondary	Lateral
(b)	Primary	Apical
(c)	Secondary	Apical
(d)	Primary	Intercalated

29. Companion cells are
 (a) Thin, parrenchymatous, enucleated cells
 (b) Thick, sclerenchymatous, nucleated cells
 (c) Thin, parenchymatous, nucleated cells
 (d) Thick, collenchymatous, enucleated cells
30. Conjoint type of vascular bundle are present in
 (a) Root, stem (b) Root, leaves
 (c) Stem, leaves (d) Root only
31. Activity of cambium is controlled by
 (a) Physiological and environmental factors
 (b) Hormonal and external factors
 (c) Internal and external factors
 (d) More than one option is correct
32. Epidermal and ground tissue system are made of
 (a) Meristem and simple permanent tissue
 (b) Primary and secondary meristem
 (c) Simple and complex permanent tissue
 (d) Simple permanent tissues

RESPONSE
GRID

21. (a) (b) (c) (d) 22. (a) (b) (c) (d) 23. (a) (b) (c) (d) 24. (a) (b) (c) (d) 25. (a) (b) (c) (d)
 26. (a) (b) (c) (d) 27. (a) (b) (c) (d) 28. (a) (b) (c) (d) 29. (a) (b) (c) (d) 30. (a) (b) (c) (d)
 31. (a) (b) (c) (d) 32. (a) (b) (c) (d)

Space for Rough Work

33. Root region with thin-walled, small cells having dense cytoplasm is
 (a) Region of cell elongation
 (b) Maturation region
 (c) Proximal to cell elongation zone
 (d) Distal to cell elongation zone
34. Periderm includes
 (a) Cork and secondary cortex
 (b) Only cork cambium
 (c) Cork cambium and cork only
 (d) Cork, phellogen and secondary cortex
35. Choose incorrect statement from the given below
 I. In dicot stem, the innermost layer of cortex is endodermis.
 II. Endodermis with casparian strips is found in dicot stem.
 III. In dicot stem, the cells of endodermis are rich in starch grain.
 (a) I & II (b) II & III
 (c) I & III (d) Only II
36. The cells which lie between xylem and phloem in dicot root are
 (a) Pith rays
 (b) Conjunctive tissue
 (c) Interfascicular cambium
 (d) Intrafascicular cambium
37. Which tissue of the dicot root is involved in the formation of vascular cambium?
 (a) Pericycle part above primary phloem
 (b) Whole pericycle
 (c) Thick walled parenchymatous cells of pith
 (d) Portion of pericycle above the protoxylem
38. Vascular bundles in dicot leaves are
 (a) Conjoint, bicollateral, closed
 (b) Radial, open
 (c) Conjoint, collateral, closed
 (d) Conjoint, collateral, open
39. Which of the following represents the functions of veins in the leaves?
 (a) Transport of water and minerals
 (b) Mechanical support
 (c) Transport of organic food material
 (d) All of these
40. In *Cuscuta* the nodes give rise to special roots which penetrate the host tissue upto
 (a) Cortex (b) Phloem
 (c) Epidermis (d) Pericycle
41. A tylose is formed from :
 (a) ray parenchyma
 (b) inner parenchyma
 (c) paratracheal parenchyma
 (d) metatracheal parenchyma
42. Which of the following plant shows multiple epidermis?
 (a) *Croton* (b) *Allium*
 (c) *Nerium* (d) *Cucurbita*
43. In the monocot root, we observe
 (a) suberized exodermis, polyarch xylem, pith
 (b) exodermis, endarch, tetarch closed bundles
 (c) conjoint, collateral, open, polyarch vascular bundle
 (d) suberized exodermis, casparian strip, passage cells, cambium
44. In a dicotyledonous stem, the sequence of tissues from the outside to the inside is :
 (a) phellem-pericycle-endodermis-phloem
 (b) phellem-phloem-endodermis-pericycle
 (c) phellem-endodermis-pericycle-phloem
 (d) pericycle-phellem-endodermis-phloem
45. The tunica corpus theory was proposed by :
 (a) Nageli
 (b) Hanstein
 (c) Schmidt
 (d) Haberlandt

**RESPONSE
GRID**

33. (a) (b) (c) (d) 34. (a) (b) (c) (d) 35. (a) (b) (c) (d) 36. (a) (b) (c) (d) 37. (a) (b) (c) (d)
 38. (a) (b) (c) (d) 39. (a) (b) (c) (d) 40. (a) (b) (c) (d) 41. (a) (b) (c) (d) 42. (a) (b) (c) (d)
 43. (a) (b) (c) (d) 44. (a) (b) (c) (d) 45. (a) (b) (c) (d)

Space for Rough Work

DAILY PRACTICE PROBLEM DPP CHAPTERWISE 6 - BIOLOGY

Total Questions	45	Total Marks	180
Attempted		Correct	
Incorrect		Net Score	
Cut-off Score	45	Qualifying Score	60
Success Gap = Net Score – Qualifying Score			
Net Score = (Correct × 4) – (Incorrect × 1)			

HINTS & SOLUTIONS

DPP/CB06

1. (b)
2. (d) Function of companion cell is to load sugar and amino acids into sieve elements. These cells use transmembrane proteins to take up by active transport.
3. (c) Phellem, phellogen and phelloderm are collectively called periderm.
4. (d) Submerged hydrophytes do not have stomata (a protective mechanism in aquatic plants against water logging of internal cells and tissues).
5. (d) Tracheids are chief water conducting elements of xylem in gymnosperms. They are devoid of protoplasm and hence dead. The wall constituting the tracheids is hard, thick and lignified. These are elongated cells with tapering ends.
6. (d)
7. (b) Vascular cambium is produced by two types of meristems, fascicular and interfascicular cambium.
8. (d) Vessels are elongated, multicellular water conducting channels with wide lumen formed by end to end fusion of a large number of vessel elements. Tracheids are elongated dead cells with tapering ends having lignified walls with large or wide lumen. Their main function is conduction of water and minerals from root to leaf.
9. (c) The concept of quiescent centre was proposed by Clowes in 1961. On the basis of autoradiographic studies of DNA synthesis in the root tip of *Zea*, he found a reservoir of cells having low DNA, RNA and protein concentration. They may or may not divide. It is resistant to damages.
10. (d)
11. (b)
12. (b) The common bottle cork is the product of phellogen. Phellogen produces cork or phellem on the outer side. It consists of dead and compactly arranged rectangular cells that possess suberised cells walls. The cork cells contain tannins. Hence, they appear brown or dark brown in colour. The cork cells of some plants are filled with air e.g., *Quercus suber* (Cork Oak or Bottle Cork).
13. (b)
14. (d) In submerged hydrophytes, whole plant body remains under water. e.g. *Ceratophyllum* and *Utricularia*. In these plants, stomata is absent and gaseous exchange takes place through general body surface.
15. (d) In collenchyma cell walls show localized thickenings due to presence of approximately 45% pectin, 35% hemicellulose and 20% cellulose.
16. (c) Being a xerophytic plant, *Nerium* bears multiple epidermis to cut the rate of transpiration.
17. (a)
18. (a) Secondary wall situated near the plasma membrane after the formation of primary wall.
19. (d)
20. (a)
21. (d)
22. (d)
23. (a) Based on position of protoxylem in relation to metaxylem, the xylem may be exarch/centripetal, endarch/centrifugal, mesarch and centerarch. In endarch condition, protoxylem lies on the inner side of metaxylem e.g., dicot and monocot stems.
24. (a) A monocot stem lacks secondary growth. The vascular bundles are oval or rounded in outline. They contain both phloem and xylem. Phloem lies towards the outside and the xylem on the inner side. Cambium is absent as the whole procambium is consumed in the formation of vascular tissues. Xylem is in the form of the letter Y. It is endarch, i.e., protoxylem lies towards the centre of the stem. Xylem is made up of vessels, tracheids, xylem parenchyma and a few xylem fibres. Metaxylem generally consists of two large oval of rounded vessels lying at the upper two angles of xylem. Protoxylem cavity is present at the end of protoxylem vessels.
25. (d) Heart wood (duramen) is the central wood of an old stem. It is dark coloured. Living cells are absent. Heart wood is the part of secondary xylem. The tracheary elements are plugged by tyloses. Tracheary elements have deposition of tannins, resins, gums, etc. Heart wood is heavier. It is more durable due to its little susceptibility to the attack of pathogens and insects. Heart wood is mechanical in function. The outer or peripheral portion of the trunk is lighter in colour and soft which performs the functions of conduction of water and minerals and it is known as sap wood or alburnum.
26. (d) Intercalated between mature tissues, it helps in regeneration.
27. (d) Spring wood or earlywood
28. (a) Shoot apical meristem
29. (c) Companion cells control activities of sieve tube.
30. (c)
31. (d) Internal (physiological) and external (environmental) factors.
32. (d)
33. (d) Meristematic zone
34. (b) Thickening of wall is due to deposition of cellulose, hemicellulose and pectin.
35. (b) Endodermis with casparian strips is found in dicot stem.
36. (d)
37. (d) The electron microscope revealed all the structural details of the cell.
38. (c)
39. (d) Important functions of veins are : (i) Conduction of water through xylem; (ii) Providing channels for translocation of organic nutrients; (iii) Conduction of minerals; (iv) By their large number, the veins and veinlets provide skeletal support to the lamina so that it can remain stretched for its optimum functioning; (v) Veins and veinlets reduce the effect of wilting.
40. (b) *Cuscuta* is a total parasite so it absorbs the prepared food from the phloem of the host, hence haustoria reaches upto phloem of host.
41. (c) Tylose is a balloon-like outgrowth of paratracheal parenchyma into a pit in the wall of a vessel or tracheid and a xylem parenchyma cell lying next to it. This xylem parenchyma occurs at the edge of annual ring around the vessels.
42. (c) Epidermis is generally uniseriate. i.e., composed of single layer of epidermal cells. In some cases, it is multilayered also. e.g., *Ficus*, *Nerium*, *Peperomia*, etc.
43. (a) In the cortex of monocot root, we observe a few layers of cell below the epidermis which have thick walls due to the deposition of a chemical suberin. These layers of suberized cells are called exodermis. There are also number alternating zones of xylem present in root. The number of xylem patches far exceeds to ten. That is why, they are called polyarch. In monocot root, there is a large sized pith made up of parenchyma tissues.
44. (c) Phellem is a suberized cell formed outside the region of stem followed by endodermis, inside the phloem. Pericycle lies immediately inside the endodermis of the dicotyledonous stem phloem. Phloem is characterized by the presence of sieve tubes.
45. (c) Tunica corpus theory was proposed by Schmidt. According to this theory, two tissue zones occur at the apex.