CHAPTER 7

Anatomy of Flowering Plants

Meristematic Tissues

1. Which one of the following is not a lateral meristem? *(2010)*

a. Interfascicular cambium
b. Phellogen
c. Intercalary meristem
d. Intrafascicular cambium

Permanent Tissues

2. Read the following statements about the vascular bundles: *(2022)*

A. In roots, xylem and phloem in a vascular bundle are arranged in an alternate manner along the different radii
B. Conjoint closed vascular bundles do not possess cambium
C. In open vascular bundles, cambium is present in between xylem and phloem
D. The vascular bundles of dicotyledonous stem possess endarch protoxylem
E. In monocotyledonous root, usually there are more than six xylem bundles present

Choose the correct answer from the options given below.

a. A, C, D and E only
b. A, B and D only
c. B, C, D and E only
d. A, B, C and D only

3. In old trees the greater part of secondary xylem is dark brown and resistant to insect attack due to *(2022)*

A. Secretion of secondary metabolities and their deposition in the lumen of vessels
B. Deposition of organic compounds like tannins and resins in the central layers of stem
C. Deposition of suberin and aromatic substances in the outer layer of stem
D. Deposition of tannins, gum, resin and aromatic substances in the peripheral layers of stem
E. Presence of parenchyma cells, functionally active xylem elements and essential oils.

Choose the correct answer from the options given below.

a. B and D only
b. A and B only
c. C and D only
d. D and E only

4. Match List-I with List-II *(2021)*

List-I		List-II	
A.	Cells with active cell division capacity	(i)	Vascular tissues
B.	Tissue having all cells similar in structure and function	(ii)	Meristematic tissue
C.	Tissue having different types of cells	(iii)	Sclereids
D.	Dead cells with highly thickened walls and narrow lumen	(iv)	Simple Tissue

Select the correct answer from the options given below.

a. A-iv B-iii C-ii D-i
b. A-i B-ii C-iii D-iv
c. A-iii B-ii C-iv D-i
d. A-ii B-iv C-i D-iii

5. The transverse section of a plant shows following anatomical features: *(2020)*

1. Large number of scattered vascular bundles surrounded by bundle sheath.
2. Large conspicuous parenchymatous ground tissue.
3. Vascular bundles conjoint and closed.
4. Phloem parenchyma absent.

Identify the category of plant and its part:

a. Monocotyledonous root
b. Dicotyledonous stem
c. Dicotyledonous root
d. Monocotyledonous stem

6. Phloem in gymnosperms lacks *(2019)*

a. Albuminous cells and sieve cells
b. Sieve tubes only
c. Companion cells only
d. Both sieve tubes and companion cells

7. Which of the following is made up of dead cells? *(2017-Delhi)*

a. Xylem parenchyma
b. Collenchyma
c. Phellem
d. Phloem

8. The balloon-shaped structures called tyloses: **[OS]** *(2016 - II)*

a. Are extensions of xylem parenchyma cells into vessels
b. Are linked to the ascent of sap through xylem vessels
c. Originate in the lumen of vessels
d. Characterise the sapwood

9. Tracheids differ from other tracheary elements in: **[OS]** *(2014)*

a. Being lignified
b. Having casparian strips
c. Being imperforate
d. Lacking nucleus

Tissue System

10. Stomata in grass leaf are: **[OS]** *(2018)*

a. Dumb-bell shaped
b. Kidney shaped
c. Rectangular
d. Barrel shaped

11. Cortex is the region found between: *(2016 - II)*

a. Endodermis and pith
b. Endodermis and vascular bundle
c. Epidermis and stele
d. Pericycle and endodermis

12. Specialised epidermal cells surrounding the guard cells are called *(2016 - I)*

a. Complementary cells
b. Subsidiary cells
c. Bulliform cells
d. Lenticels

13. Vascular bundles in monocotyledons are considered closed because: *(2015)*

a. There are no vessels with perforations
b. Xylem is surrounded all around by phloem
c. A bundle sheath surrounds each bundle
d. Cambium is absent

Anatomy of Dicot & Monocot Plants

14. Select the correct pair. *(2021)*

a.	In dicot leaves, vascular bundles are surrounded by large thick-walled cells	-	Conjunctive tissue
b.	Cells of medullary rays that form part of cambial rings	-	Interfascicular cambium
c.	Loose parenchyma cells rupturing the epidermis and forming a lens-shaped opening in bark	-	Spongy parenchyma
d.	Large colorless empty cells in the epidermis of grass leaves	-	Subsidiary cells

15. Large, empty colourless cells of the adaxial epidermis along the veins of grass leaves are *(2020-Covid)*

a. Guard cells
b. Bundle sheath cells
c. Bulliform cells
d. Lenticels

16. Grass leaves curl inwards during very dry weather. Select the most appropriate reason from the following *(2019)*

a. Closure of stomata
b. Flaccidity of bulliform cells
c. Shrinkage of air spaces in spongy mesophyll
d. Tyloses in vessels

17. Secondary xylem and phloem in dicot stem are produced by *(2018)*

a. Apical meristem
b. Vascular cambium
c. Phellogen
d. Axillary meristems

18. Casparian strips occur in *(2018)*

a. Epidermis
b. Pericycle
c. Cortex
d. Endodermis

19. A major characteristic of the monocot root is the presence of: *(2015)*

a. Vasculature without cambium
b. Cambium sandwiched between phloem and xylem along the radius
c. Open vascular bundles
d. Scattered vascular bundles

Secondary Growth

20. The anatomy of springwood shows some peculiar features. Identify the correct set of statements about springwood.

A. It is also called as the earlywood
B. In spring season cambium produces xylem elements with narrow vessels
C. It is lighter in colour.
D. The springwood along with autumnwood shows alternate concentric rings forming annual rings
E. It has lower density

Choose the correct answer from the options given below.

a. C, D and E only
b. A, B, D and E only
c. A, C, D and E only
d. A, B and D only

21. Match List-I with List-II *(2021)*

List-I		List-II	
A.	Lenticels	(i)	Phellogen
B.	Cork cambium	(ii)	Suberin deposition
C.	Secondary cortex	(iii)	Exchange of gases
D.	Cork	(iv)	Phelloderm

Choose the correct answer from the options given below:

a. A-iii B-i C-iv D-ii
b. A-ii B-iii C-iv D-i
c. A-iv B-ii C-i D-iii
d. A-iv B-i C-iii D-ii

22. Identify the **incorrect** statement. *(2020)*
a. Sapwood is involved in conduction of water and minerals from root to leaf.
b. Sapwood is the innermost secondary xylem and is lighter in colour.
c. Due to deposition of tannins, resins, oils, etc., heart wood is dark in colour.
d. Heart wood does not conduct water but gives mechanical support.

23. Which of the following statements about cork cambium is incorrect? *(2020-Covid)*
a. It forms a part of periderm
b. It is responsible for the formation of lenticels
c. It is a couple of layers thick
d. It forms secondary cortex on its outerside

24. Which of the statements given below is **not** true about formation of annual rings in trees? *(2019)*
a. Annual ring is a combination of spring wood and autumn wood produced in a year
b. Differential activity of cambium causes light and dark bands of tissue-early and late wood respectively.
c. Activity of cambium depends upon variation in climate.
d. Annual rings are not prominent in trees of temperate region.

25. Plants having little or no secondary growth are *(2018)*
a. Grasses
b. Deciduous angiosperms
c. Conifers
d. Cycads

26. The vascular cambium normally gives rise to: *(2017-Delhi)*
a. Phelloderm
b. Primary phloem
c. Secondary xylem
d. Periderm

27. Identify the wrong statement in context of heartwood: *(2017-Delhi)*
a. Organic compounds are deposited in it
b. It is highly durable
c. It conducts water and minerals efficiently
d. It comprises dead elements with highly lignified wall

28. Read the different components from (A) to (D) in the list given below and tell the correct order of the components with reference to their arrangement from outer side to inner side in a woody dicot stem: *(2015 Re)*
A. Secondary cortex B. Wood
C. Secondary phloem D. Phellem
The correct order is:
a. (A), (B), (D), (C)
b. (D), (A), (C), (B)
c. (D), (C), (A), (B)
d. (C), (D), (B), (A)

29. You are given a fairly old piece of dicot stem and a dicot root. Which of the following anatomical structures will you use to distinguish between the two? *(2014)*
a. Cortical cells
b. Secondary xylem
c. Secondary phloem
d. Protoxylem

30. Lenticels are involved in: *(2013)*
a. Photosynthesis
b. Transpiration
c. Gaseous exchange
d. Food transport

31. Interfascicular cambium develops from the cells of: *(2013)*
a. Pericycle
b. Medullary rays
c. Xylem parenchyma
d. Endodermis

32. Age of a tree can be estimated by: *(2013)*
a. Diameter of its heartwood
b. Its height and girth
c. Biomass
d. Number of annual rings

Answer Key

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
c	none	b	d	d	d	c	a	c	a	c	b	d	b	c	b	b

18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
d	a	c	a	b	d	d	a	c	c	b	d	c	b	d