BIOLOGY

NEET & AIIMS

ANATOMY OF FLOWERING PLANTS

Examples

1. Name the primary meristems seen in flowering plants.

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2. What is the role of secondary meristems in the body of some plants?

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3. Give two characteristic features of parenchymatous cells.

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4. Collenchyma differs from sclerenchyma in

(i) Retaining protoplasm at matrurity.

(ii) Having thick walls.

(iii) Being meristematic

(iv) Providing mechanical support to the plant.

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5. What is endarch condition? Where is it present?

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6. Name the vessel-less families of angiosperms.

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7. What are pit field? Where are they present?

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8. Which component of the pholem provides the mechanical support to the plants?

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9. Write two features of epidermal cels of plants.

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10. Define stomatal apparatus.

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11. What are the parts of cortex in a dicotyledon stem and a monocotyledon root?

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12. What is the role of vascular cambium in dicots?

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13. Name the part of general cortex in dicot root which is made up barrel shpaed cells.

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14. Name one structure which is very distinct in roots but poorly developed or even absent in stems.

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15. What is the role of bulliform cells in the grasses?

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16. What is the difference in the appearance of spring and autumn wood?

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17. Discuss the differential activity of vascular cambium w.r.t secondary xylem and secondary pholem.

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18. What is the location of the oldest and youngest layers of secondary pholem in a dicot stem?

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19. What is the role of pericycle in secondary growth of dicot roots?

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Try Yourself

1. Why apical intercalary meristems are called primary meristems?

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2. The location of apical meristms is

(1) Lateral sides of roots and shoots

(3) At the tips of roots and shoots.

(4) Between apex and mature areas of roots and shoots.

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3. Give three exmaples of secondary meristems.

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4. Which of the following statements is incorrect for secondary meristems?

(1) They regenerate the parts of grasses damaged by grazers.

(2) They are the cylindrical meristems.

(3) They occur in the mature regions of roots and shoots.

(4) They appear later than primary meristems in the life of a plant.

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5. Why parenchyma is called a simple tissue?

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6. All of the following statements are correct for cells of parenchyma, except

A. They are generally isodiametric

B. They have lignified cell walls.

C. They may be spherical, oval, polygonal or elongated in shape.

D. They are the mature cells.

Answer: b

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7. Collenchyma tissue is a.....tissue.

(1) Living and non-mechanical.

(2) Dead and mechanical

(3) Living and mechanical

(4) Dead and non-mechanical

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8. Sclerenchyma tissue is a .....tissue.

(1) Living and non-mechanical

(2) Dead and mechanical

(3) Living and mechanical

(4) Dead and non-mechanical.

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9. Ligin is deposited in a net-like manner in which of the following types of thickeningin inner walls of tracheids?

(1) Annular

(2) Spiral

(3) Scalariform

(4) Reticulate

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10. Which of the following is a living component of xylem?

A. Xylem fibres

B. Tracheids

C. Vessels

D. Xylem parenchyma

Answer: D

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11. Xylem fibres posses obliterated central lumen due to very thick walls. This helps to perform the function of

A. Conduction

B. Storage of food

C. Mechanical support

D. Both (2) and (3)

Answer: c

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12. Tracheids the found in all the following plants, except

A. Pteridophytes

B. Gymnosperms

C. Bryophytes

D. Angiosperms

Answer: c

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13. The albuminous cells occur in the

A. Dicots

B. Monocots

C. Gymnosperms

D. All of these

Answer: C

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14. Which of the following component of pholem is made up of sclerenchymatous cells?

A. Pholem fibres

B. Sieve tubes

C. Companion cells

D. Pholem parenchyma

Answer: A

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15. Companion cells are usually seen associatied with

A. Vessels

B. Sieve tube elements

C. Tracheids

D. Pholem fibres

Answer: B

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16. Component of pholem which is absent most of the monocots is

A. Pholem parenchyma

B. Sieve pores

C. Sieve tube

D. Companion cell

Answer: A

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17. Which of the following statement is incorrect for the epidermis?

(1) It is the outermost layer of the primary plant body.

(2) It is often covered by cuticle externally

(3) It is usually multilayered.

(4) It is made up of completely arranged cells.

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18. Cuticle is absent in

A. Monocot leaf epidermis

B. Dicot leaf epidermis

C. Stem epidermis

D. Root epidermis

Answer: D

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19. Which of the following components of epidermal tissue system posses chloroplast?

A. Trichomes

B. Guard cells

C. Subsidiary cells

D. Cuticle

Answer: B

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20. All of the following statements are incorrect for guard cells, except

A. They are bean-shaped in grasses

B. Non green cells

C. They do not enclose a stomatal pore

D. Their outer wall are thin and inner wall are thick

Answer: d

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21. Ground tissue system is not differential into which of the following components?

A. Epidermis

B. Hypodermis

C. Endodermis

D. Medulla

Answer: A

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22. innermost layer of cortex is

A. Epidermis

B. Hypodermis

C. Endodermis

D. Pith

Answer: c

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23. Vascular bundles with cambium are called

A. Closed

B. Open

C. Exarch

D. Endarch

Answer: B

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24. In a stem, the vascular bundles and xylary elements are .....and ..... respectively,

A. Radial, endarch

B. Radial, exarch

C. Conjoint, endarch

D. Conjoint, exarch

Answer: c

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25. Lateral roots arise from

A. cortex

B. Endodermis

C. Cork cambium

D. Pericycle

Answer: d

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26. Dicot root is similar in all the given characters to monocot root, except.

A. Radial, exarch vascualr bundles

B. Unicelled root hairs

C. Pericyle forms the lateral roots

D. Well developed pith

Answer: D

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27. Vascular bundle is found surrounded by a well developed sclerenchymatous sheath in.....

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28. Pith is well developed in

A. Dicot stem and monocot root

B. Monocot stem and dicot root

C. Monocot root and monocot stem

D. Dicot root and dicot stem

Answer: a

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29. The bulliform cells are present in the

A. Spongy parenchyma

B. Adaxial epidermis

C. Palisade parenchyma

D. Abaxial epidermis

Answer: b

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30. What is the true about a monocot leaf?

A. Presence of reticualte venation

B. Absence of bulliform cells.

C. Absence of vascualr bundles

D. Absence of differential mesophyll

Answer: d

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31. The annual rings are formed due to

A. Uniform environmental conditions

B. Non-uniform environmental conditions.

C. Absence of secondary growth

D. Absence of primary growth

Answer: B

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32. Which of the following is not true about early wood?

A. It is formed during spring season

B. It has a lower density than late wood

C. Its vessels have wider lumen

D. It is produced when activity of cambium is lesser.

Answer: d

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33. The meristem which does not participate in the formation of secondary tissues is:

A. Intercalary meristem

B. Vascular cambium

C. Interfascicular cambium

D. Cork cambium

Answer: a

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34. Vascular cambium ring is constituted by

A. Interfascicular and cork cambium

B. Intrafascicular and cork cambium

C. Intrafascicular and interfascicular cambium

D. Only cork cambium

Answer: C

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35. In a dicot stem, youngest layer of secondary xylem is situated

A. In between pith and primary xylem

B. Just outside the vascular cambium

C. Just on inner side of the vascular cambium

D. Just inside the phellogen

Answer: C

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36. Which of the following is called early wood?

A. Spring wood

B. Autumn wood

C. Primary xylem

D. Secondary pholem

Answer: A

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37. In a dicotyledonous stem, the sequence of tissues from the outside to the inside is

A. Phellem, phellogen- endodermis- secondary cortex.

B. Phellem-phellogen- phloem- xylem

C. Phellem-cork cambium -secondary pholem- phelloderm

D. Pericycle-phellem- pholem-endodermis

Answer: b

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38. The cambium ring of roots resembles the cambium ring of stem in

A. Its mode of function

B. Its origin from ground tissue

C. Its wavy outline

D. All of these

Answer: a

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Exercise

1. Intercalary meristem is related to all, except

A. Present between permanent cells

B. Primary meristem

C. Increasing the grith of axis

D. Regenerates part of grasses removed by grazing herbivores.

Answer: C

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2. Choose odd one out w.r.t. origin

A. Interfascicular cambium

B. Intercalary meristem

C. Apical meristem

D. Intrafascicular cambium

Answer: A

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3. Find odd one out w.r.t histogens found in shoot apex according to Hanstein

A. Tunica

B. Periblem

C. Plerome

D. Dermatogen

Answer: A

4. Select an incorrect match

A. Tunica-Corpus theory- Schmidt

B. Histrogen theory- Hanstein

C. Quiescent center theory - Clowes

D. Korper -Kappe theory- Hofmeister

Answer: D

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5. Thickening material present in wall of collenchyma is

A. Pectin, cellulose, hemicellulose

B. Lignin, cellulose, hemicellulose

C. Hemicellulose, subernin, cellulose

D. Suberin, pectin, cellulose

Answer: A

6. Sclereids possess

A. Tapering ends

B. Highly thickened wall

C. Hemicellulosic wall

D. Broad lumen

Answer: B

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7. Major xylary element in wood of a gymnospermic plant is

A. Vessel

B. Tracheid

C. Xylem fibre

D. Xylem parenchyma

Answer: B

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8. Which of the following cells helps in maintaining the pressure gradient in the sieve tubes?

A. Pholem parenchyma

B. Bast fibre

C. Companion cells

D. Wood fibre

Answer: C

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9. Which component is not found in pholem of angiosperms?

A. Albuminous cells

B. Sieve tube

C. Companion cells

D. Bast fibre

Answer: A

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10. Sclerenchyma fibres are absent in

A. Protoxylem

B. Protopholem

C. Metaxylem

D. More than one option is correct

Answer: D

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11. Green cells of epidermis are

A. Bulliform cells

B. Subsidiary cells

C. motor cells

D. guard cells

Answer: D

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12. Trichomes

A. Are not hair

B. May be branched

C. Are usually single celled

D. Are always non-secondary

Answer: B

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13. Multilayred empidermis is found in the leaves of

A. Nerium and Ficius

B. Ficus and Vanda

C. Equisetum and Grasses

D. Vanda and Nerium

Answer: A

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14. Dicot root is similar in all the given characters to monocot root, except.

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15. Casparian strips are found on radial and inner walls of

A. Stem endodermis

B. Root endodermis

C. Pericycle

D. Outer cortex

Answer: B

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16. Starch grains are abundant in the endodermal cells of

A. Monocot root

B. Dicot stem

C. Monocot stem

D. Dicot root

Answer: B

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17. Stem of barley shows

A. Presence of collenchyma in hypodermis

B. Scattered vascular bundles

C. Presence of parenchymatous pericytes

D. Presence of parenchymatous pericytes.

Answer: B

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18. (a) Palisade tissue is present towards upper epidermis in monocot leaves.

(b) Lower layer of mesophyll cells is loosely packed with few chloroplasts in dicot leaves.

(c) Dicot leaves have conjoint, collateral and closed vascular bundles.

A. All are incorrect

B. Only b is correct

C. Only a is incorrect

D. Only c is incorrect

Answer: C

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19. Conjoint, collateral, endarch and closed vascular bundles are found in

A. Monocot root

B. Monocut stem

C. Dicot root

D. Dicot stem

Answer: B

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20. Bulliform cells are

A. Empty

B. Colourless

C. Found in grass leaves

D. All of these

Answer: D

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21. Cambium ring in dicot system is

A. Primary meristerm in origin

B. Secondary meristem in origin

C. Promeristem in origin

D. Both primary and secondary meristem in origin

Answer: D

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22. Dendrochronolgy deals with the study of

A. Phylogeny

B. Numerical taxonomy

C. Age of trees

D. Grasses

Answer: C

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23. Heartwood is characterised by all, except

A. Presence of tyloses

B. Presence of tannins, resins, oils, gums etc.

C. Its commercial importance for timber

D. Active in water conduction

Answer: D

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24. Sapwood is

A. Secondary xylem

B. Secondary pholem

C. Phellem

D. Secondary cortex

Answer: A

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25. Peripheral region of secondary xylem is

A. Light and functional

B. Dark and non-functional

C. Hard and durable

D. Resistant and light

Answer: A

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26. Bark includes

A. Periderm + Secondary pholem

B. Periderm + primary xylem

C. Secondary phloem + xylem

D. Secondary xylem + Cork cambium

Answer: B

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27. Which of the following tissue makes phellogen during the secondary growth in dicot roots?

A. Endodermis

B. Hypodermis

C. Epidermis

D. Periderm

Answer: D

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28. Which of the following structures is not formed by activity of cork cambium?

A. Phellem

B. Phelloderm

C. Secondary xylem

D. Corky layer

Answer: C

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29. Choose correct option w.r.t. Lenticels

A. Lens shaped

B. Permit gaseous exchange

C. Occur in most woody trees

D. More than one option is correct

Answer: D

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30. Choose correct option w.r.t. origin of cork cambium in dicot stem and root

A. Completely primary in both

B. Completely secondary in both

C. Partly primary and partly secondary in both

D. Primary in stem and secondary in root

Answer: B

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Assignment Section A Objective Type Questions

1. Tissues are

A. Groups of cells which are similar in origin and function

B. Groups of organs which are similar in origin and function

C. Cells which are similar in function but not in origin.

D. Groups of cells which are not similar in origin and function.

Answer: A

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2. Plant tissues are divided into meristematic and permanent tissues on which of the following basis?

A. Whether the plant is a dicot or a monocot

B. Whether the cells being formed are capable of dividing or not

C. Position

D. Origin

Answer: B

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3. The axillary bud is constituted by the cells 'left behind' from-

A. Root apical meristem

B. Shoot apical meristem

C. Intercalary meristem

D. Lateral meristem

Answer: B

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4. The woody axis of flowering plants is produced by

A. Apical meristem

B. Primary meristem

C. Intercalary meristem

D. Secondary meristem

Answer: D

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5. All of the following are lateral meristems, except

A. Intercalary meristem

B. Fascicular vascular cambium

C. Interfasscicular cambium

D. Cork cambium

Answer: A

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6. What is the function of lateral meristem?

A. It gives rise to the lateral branches

B. It increases girth of the plant axis

C. It increases girth as well as length of the plant axis

D. It increases only length of the plant axis

Answer: B

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7. The parenchymatous cells ar

A. Dead

B. Thick-walled

C. Thin-walled

D. Thick-walled and dead

Answer: C

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8. Collenchyma differs from parenchyma in

A. Possessing thick cell wall

B. Lacking protoplasm

C. Containing chloroplasts usually

D. Being meristematic

Answer: A

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9. Which among the following are absent in the collenchyma?

A. Chloroplasts

B. Vacuoles

C. Intercellular spaces

D. Pectin deposition

Answer: C

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10. The elongated, thick-walled and tapering cells are

A. Parenchymatous

B. Collenchymatous

C. Chlorenchymatous

D. Sclerenchymatous

Answer: D

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11. Sclereids are commonly found in

A. Young stems and petioles of leaves

B. Fruit walls of nuts

C. Roots

D. Fleshy stems

Answer: B

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12. What is the function of vessels in flowering plants?

A. Transport of food

B. To get rid of excess water

C. Photosynthesis

D. Transport of water and minerals

Answer: D

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13. Which of the following statements is correct?

A. Angiospems lack vessels in their xylem

B. The presence of vessels is a characteristic feature of angiosperms

C. The cells of vessels are living

D. Vessels is a long cylindrical tube-like cells made up of many vessel members

Answer: B

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14. The central lumens are obliterated in

A. Xylem fibres

B. Pholem parenchyma

C. Xylem parenchyma

D. Sieve tubes

Answer: A

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15. Which of the following is true for endarch type of primary xylem?

A. Protoxylem lies towards the periphery of the organ

B. Metaxylem lies towards the periphery of the organ

C. Metaxylem lies towards the pith of the organ

D. Protophloem lies towards the path of the organ

Answer: B

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16. Which of the following is absent in most of the monocotyledons?

A. Pholem parenchyma

B. Tracheids

C. Vessels

D. Xylem parenchyma

Answer: A

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17. Stomata are the component of

A. Epidermal tissue system

B. Ground tissue system

C. Conducting tissue system

D. Vascular tissue system

Answer: A

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18. The specialised epidermal cells present in the vicinity of guard cells are called

A. Bulliform cells

B. Companion cells

C. Subsidiary cells

D. Endodermal cells

Answer: C

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19. Root hairs are the

A. Multicellular elongations of epidermal cells

B. Acellular elongations of epidermal cells

C. Unicellular elongations of epidermal cells

D. Multicellular elongations of endodermal cells.

Answer: C

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20. The distinguishing feature of open vascular bundles is presence of

A. Cambium

B. Xylem and phloem

C. Pericycle

D. Endodermis

Answer: A

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21. Which type of arrangement of vascular bundles occurs in the roots of monocots?

A. Conjoint open

B. Radial

C. Conjoint closed

D. Bicollateral

Answer: B

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22. The presence of cambium in the vascular bundles provides them the ability to

A. Radially transport the food

B. Form secondary tissues

C. Prevent water loss due to transpiration

D. Conduct photosynthesis

Answer: B

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23. Lateral roots arise from

A. Endodermis

B. Pericycle

C. Conjunctive tissue

D. Cambium ring

Answer: B

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24. Polyarch xylem bundles are found in

A. Monoct root

B. Dicot root

C. Monocot stem

D. Dicot stem

Answer: A

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25. The casparian strips are present on the plant cells of roots which are

A. Bean-shaped

B. Dumb-bell shaped

C. Barrel-shaped

D. Lens-shaped

Answer: C

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26. The conjunctive tissue lies between the

A. Xylem and pholem

B. Pericycle and endodermis

C. Epidermis and cotrex

D. Epidermis and hypodermis

Answer: A

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27. In which of the following characters, a monocot root differs from a dicot root?

A. Radial vascular bundles

B. Large pith

C. Conjuctive tissue in between xylem and pholem

D. Single layered endodermis

Answer: B

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28. Match the following

Column-I	Column-II
a. Hypodermis in dicot stem	(i) Absent
b. Pericycle in dicot stem	(ii) Parenchymatous
c. Ground tissue in monocot stem	(iii) Collenchymatous
d. Phloem parenchyma in monocot stem	(iv) Sclerenchymatous

A. a(iv), b(i), c(iii), d(ii)

B. a(i), b(ii), c(iv), d(iii)

C. a(iii), b(iv), c(ii), d(i)

D. a(ii), b(ii), c(i), d(iv)

Answer: C

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29. Vascualr bundles surrounded by a sclerenchymatous bundle sheath is a feature of

A. Dicot root

B. Monocot root

C. Dicot root

D. Monocot stem

Answer: D

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30. The central most portion of stem of dicotyledonous plants is occupied by

A. Vascular bundles

B. Pericycle

C. Pith

D. Cortex

Answer: C

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31. Which of the following is not true for the vascular bundles of monocotyledonous stems?

A. Scattered in the ground tissue

B. Possess water-containing cavities

C. Ring' arrangement

D. Conjoint and closed

Answer: C

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32. The epidermis in a dorsiventral leaf

(a) Covers both adaxial and abaxial surfaces

(b) Is not covered by cuticle

(c) Bears more stomata on the upper side

(d) May even lack stomata on the upper side

Which of the above statements are correct?

A. (a) and (c)

B. (b) and (d)

C. (a) and (d)

D. (b) and (c)

Answer: C

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33. Choose correct option w.r.t. spongy mesophyll in dicot leaf.

A. Numerous large spaces and air cavities between its cells.

B. A large number of chloroplasts

C. Present on the adaxial surface

D. Vertical and parallel arrangemetn of cells

Answer: A

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34. The size of vascualr bundles in a dorsiventral leaf is dependent on

A. Size of lamina

B. Size of veins

C. Number of stomata

D. Number of veins

Answer: B

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35. The stomata in an isobilateral leaf

A. Are present only on the adaxial epidermis

B. Are present only on the abaxial epidermis

C. Are absent on both the surfaces of the epidermis

D. Are present on both the surfaces of the epidermis

Answer: D

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36. During water stress, the bulliform cells

(a) Become turgid

(b) Become flaccid

(c) Make the leaves curl inwards

(d) Make the leaf surface exposed

The correct options are

A. (a) and (c)

B. (b) and (d)

C. (a) and (d)

D. (b) and (c)

Answer: D

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37. The tissue which participate in the secondary growth is

A. Lateral meristem

B. Apical meristem

C. Intercalary meristem

D. Primary meristem

Answer: A

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38. The infrascicular cambium

A. Is a simple permanent tissues

B. Is a meristematic tissue

C. Is a complex permanent tissues

D. Is secondary meristern

Answer: B

39. The cambial ring is generally

A. More active on the innre side than on the outer

B. More active on the outer side than the inner

C. Equally active towards both sides

D. Equally inactive towards both sides

Answer: A

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40. In a dicot stem, the interfasicular cambium strip arises

A. Between xylem and pholem

B. From medullary rays

C. From pith

D. From pericycle

Answer: B

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41. The wood is, in fact, a

A. Primary xylem

B. Primary phloem

C. Secondary xylem

D. Secondary pholem

Answer: C

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42. An annual ring is formed by

A. Two consecutive rings of spring wood

B. Two alternate rings of spring wood and autumn wood.

C. Two consecutive rings of autumn wood

D. Two alternate rings of sapwood and heartwood

Answer: B

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43. Growth rings are well marked in trees growing in

A. Mumbai

B. Chennai

C. Shimla

D. Kolkata

Answer: C

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44. Which of the following is the function of heartwood?

A. Mechanical support

B. Radial conduction of water and minerals

C. Lateral conduction of food

D. Minimise water loss in water stress

Answer: A

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45. The heartwood cannot conduct water because of

A. Peripheral locations in the stems

B. Suberized cell walls

C. Central location in the stems

D. Deposition of organic compounds

Answer: D

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46. Besides phellem, phellogen, root periderm comprises of

A. Secondary cortex

B. Phelloderm

C. Bark

D. More than one option is correct

Answer: B

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47. The feature which is common to both heartwood and sapwood is

A. Both are the regions of secondary xylem

B. Both are involved in the conduction of water

C. Both comprise dead elements with accumulation of aromatic compounds

D. Both are located in the central layers of the stem.

Answer: A

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48. In a stem which is covered by periderm and in which stomata are absent, gaseous exchange takes place through

A. Bulliform cells

B. Lenticles

C. Pneumatophores

D. Trichomes

Answer: B

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49. Bark refers to all tissues exterior to the

A. cork cambium

B. Pericycle

C. Vascular cambium

D. Periderm

Answer: C

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50. Which of the following is true for the dicot roots?

A. Both vascular and cork cambium are responsible for the secondary growth

B. Vascular cambium arises during the primary growth

C. They do not show secondary growth just like monocot roots

D. Cork cambium develops during the primary growth

Answer: A

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Assignment Section B Objective Type Questions

1. Meristem is characterized by

A. Isodiametric cells with cellulosic thin wall

B. Absence of intercellular space and vacuole

C. Absence of reserve food materials and plastids

D. All of these

Answer: D

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2. According to histogen theory, stem epidermis is derived from

A. Calyptrogen

B. Dermatogen

C. Protoderm

D. Periblem

Answer: B

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3. (A) According to Clowes roots apex consists of an inverted cup like structure.

(B) Low amount of RNA, DNA and protein is characteristic of waiting meristem.

(c) Cells of reserve meristem can divide only when the root apex gets injured.

A. All are correct

B. A and C are incorrect

C. A and B are incorrect

D. B and C are incorrect

Answer: A

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4. Collenchyma is a type of mechanical tissue but it is not as efficient as sclerenchyma. However, it has certain advantages like

A. it offers no resistance to the growing organs

B. it has no cellulose In the cell wall

C. it is flexible

D. It has the power of growth, it offers no resistance to the growing organs and is not flexible

Answer: C

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5. Isodiametric sclereids, found in hard endocarp of coconut and fleshy portion of some fruits are

A. Brachysclereids

B. Asterosclereids

C. Osteosclereids

D. Trichosclereids

Answer: A

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6. Main wate-condicuting element of xylem in homoxylous plants is

A. Tracheary element

B. Vessel

C. Tracheid

D. Xylem parenchyma

Answer: C

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7. In trees, death of protoplasts is essential for a vital function such as

A. Food transport

B. Water transport

C. Both (1) and (2)

D. Stomatal movements

Answer: B

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8. Find set of cells connected by pit fields between their common longitudinal walls

A. Composition cell and pholem fibres

B. Companion cell and sieve tube

C. Sieve cell and albuminous cell

D. Sieve tube and pholem fibre

Answer: B

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9. In old sieve tubes at the end of growing season, which of the following gets deposited over sieve plate to regulate sugar transport :

A. P-protein

B. Callose

C. Lignin

D. ABA

Answer: B

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10. Parenchymatous structure with intercellular spaces is

A. Epidermis

B. Endodermis

C. Cortex

D. Pericycle

Answer: C

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11. Select correct features w.r.t. trichomes in shoot system

Usually unicelled

(b) Branched or unbranched

(c) May be secretory

(d) Soft or still

(e) Helps against transpiration

A. a,b,d and e

B. All except c and d

C. All except a

D. a, c and e

Answer: C

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12. The pericycle of roots is never sclerenchymatous because it

A. Does not act as a mechanical tissue in roots

B. Is the place of origin of root branches

C. Gives rise to root hairs

D. Gives rise to root hairs (when the root is young), and to root branches (at maturity)

Answer: B

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13. Tissue commonly known as passport point or biological check post is characterised by

A. Bulliform cells and raphides

B. Cystolith and motor cells

C. Casparian bands and passage cells

D. Passage cells and fats

Answer: C

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14. Seat of origin of lateral root and formation of cork cambium are features related to

A. Endodermis

B. Pericycle

C. Hypodermis

D. Pith rays

Answer: B

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15. Centripetal and centrifugal xylems are important features of

A. Root and stem respectively

B. Exarch and endarch respectively

C. Endarch and exarch respectively

D. Both (1) and (2)

Answer: D

 Watch Video Solution

16. Memebers of Winteracae, Tetracentraceae and trochodendraceae

A. Do not have tracheids

B. Do not have albuminous cells

C. Do not have vessels

D. More than one option is correct

Answer: D

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17. Which of the following vascualr bundles are always open?

A. Radial

B. Collateral

C. Bicollateral

D. Concentric

Answer: C

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18. The vascular bundlies in the stems of several dicots are conjoint, collateral, and open. In each of these bundles,

A. Xylem and pholem are on the same radius with pholem towards the pitch and xylem towards the pericycle without a strip of cambium between them

B. Xylem and pholem are on the same radius with xylem situated towards the pericycle and a strip of cambium separates the two

C. Xylem completely surrounds the phloem on all sides but the two are separated by the cambium.

D. Phloem completely surrounds the xylem and a strip of cambium separates the two

Answer: B

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19. Which is not true for monocot stem ?

A. Sclerenchymatous hypodermis

B. Presence of water canals in pitch

C. Conjoint, collateral closed vascular bundles

D. Presence of bundle sheath

Answer: B

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20. Vascular bundles are conjoint, collateral, endarch and lack cambium between xylem and pholem in all, but not in

A. Maize

B. Barley

C. Wheat

D. Sunflower

Answer: D

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21. Select a set having correct match

	Dicot stem	Monocot stem
(1)	Sclerenchymatous hypodermis	Collenchymatous hypodermis
(2)	Parenchymatous pericycle	Sclerenchymatous pericycle
(3)	Epidermis with trichomes	Water containing cavities in vascular bundles
(4)	Oval bundles	Wedge shaped bundles

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22. Monocot stem differs from dicot stem in having

A. Endarch xylem element

B. Collateral V.B.

C. Well developed pith

D. Polymorphic vascular bundles

Answer: D

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23. Vascular cambium is a meristematic layer that cuts off

A. Primary xylem and primary pholem

B. Xylem vessels and xylem tracheids

C. Primary xylem and secondary xylem

D. Secondary xylem, secondary pholem and medullary rays

Answer: D

 Watch Video Solution

24. Derivatives of the secondary meristem in the steler region are

A. Phellem and phelloderm

B. Alburnum and primary pholem

C. Duramen and alburnum

D. Primary xylem and secondary pholem

Answer: C

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25. What is the position of oldest secondary phloem ?

A. Just outside the pericycle

B. Just outside the vascular cambium

C. Just below the pericycle

D. Below the vascular cambium

Answer: C

Watch Video Solution

26. Youngest layer of secondary xylem in wood of dicot stem is located just

A. Between pith and primary xylem

B. Just outside vascular cambium

C. Just inside vascular cambium

D. Just inside cork cambium

Answer: C

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27. (A) heart wood is durable, dark and central in position.

(B) Tyloses are balloon like structures of xylem parenchyma in vessel lumen.

(C) Late wood is formed during spring season.

A. All are correct

B. Only A is correct

C. Only B is incorrect

D. Only C is incorrect

Answer: D

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28. Secondary growth in extrasteler region is due to activity of

A. Interfascicular cambium

B. Intrafascicular cambium

C. Cork cambium

D. Intercalary meristem

Answer: C

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29. Seasonal activity of vascular cambium is influenced by many factors, except

A. Geographical location of plant

B. Relative humidity and temperature

C. Photoperiod and water supply

D. Leaf orientation

Answer: D

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30. When secondary growth is initiated in dicot stem, what will happen first?

A. The cells of cambium divide periclinally to form xylem mother cells

B. Interfascicular cambium join with intrafasciciular cambium

C. Parenchymatous cells present between vascular bundles become meristematic

D. Pith get obliterated

Answer: C

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31. All given tissues are formed as a result of redifferentiation process, except

A. Phellum

B. Phelloderm

C. Secondary xylem

D. Interfascicular cambium

Answer: D

Watch Video Solution

32. Vascular cambium of dicot root is purely secondary in origin and airse from

A. Cells of conjuctive parenchyma just below phloem

B. Cells of pericycle just outside protoxylem

C. Cells of parenchyma between xylem and pholem

D. More than one option is correct

Answer: D

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33. Select wrong statement regarding secondary phloem

A. Arise due to activity of procambium

B. Occurs during secondary growth

C. No distinction between protophloem and metaphloem

D. Secondary permanent tissue

Answer: A

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34. Vascualr bundles in dicot leaves are

A. Scattered, conjoint, collateral, open

B. Scattered , conjoint, collateral, closed

C. Scattered, conjoint, collateral, open

D. Ringed, conjoint, collateral, closed

Answer: B

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35. Lenticles are formed due to rupture in epidermis because of pressure exerted by

A. Epithem cells

B. Tyloses

C. Complementary cells

D. Phellem

Answer: C

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Section C Previous Year Questions

1. Indentify the wrong statement in context of heartwood

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 walls

Answer: C

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2. Which of the following is made up of dead cells

A. Xylem parenchyma

B. Collenchyma

C. Phellem

D. Pholem

Answer: C

Watch Video Solution

3. The vascular cambium normally gives rise to

A. Phelloderm

B. Primary pholem

C. Secondary xylem

D. Periderm

Answer: C

Watch Video Solution

4. Cortex is the region found between

A. Epidermis and sale

B. Pericycle and endodermis

C. Endodermis and pith

D. Endodermis and vascular bundle

Answer: A

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5. the baloon- shaped structuces called tyloses

A. Originate in the lumen of vessels

B. Characterize the sapwood

C. Are extensions of xylem parenchuyma cells into vessels.

D. Are linked to the ascent of sap through xylem vessels.

Answer: C

 Watch Video Solution

6. Specialised epidermal cells surrounding the guards cells are called

A. Lenticels

B. Complementary cells

C. Subsidiary cells

D. Bulliform cells

Answer: C

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7. Read the different components from (a) to (d) in the lists 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.

A. Secondary cortex

B. Wood

C. Secondary phloem + xylem

D. Phellem

Answer: D

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8. Vascular bundles in monocotyledons are considered closed because :

A. Xylem is surrounded all around by pholem

B. A bundle sheath surrounds each bundle

C. Cambium is absent

D. There are no vessels with perforations

Answer: C

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9. A major characteristic of the monocot root is the presence of

A. Cambium sandwitched between pholem and xylem along the radius

B. Open vascular bundles

C. Scattered vascular bundles

D. Vasculature without cambium

Answer: D

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10. 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.

A. Secondary xylem

B. Seconday pholem

C. Protoxylem

D. Cortical cells

Answer: C

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11. Tracheids differ from other tracheary elements in

A. Having casparian strips

B. Being imperforate

C. Lacking nucleus

D. Being lignified

Answer: B

Watch Video Solution

12. Age of tree can be estimated by

A. Biomass

B. Number of annual rings

C. Diameter of its heartwood

D. Its height and girth

Answer: B

Watch Video Solution

13. Interfascicular cambium develops from the cells of

A. Xylem parenchyma

B. Endodermis

C. Pericycle

D. Medullary rays

Answer: D

Watch Video Solution

14. Water containing cavities in vascular bundles are found in

A. Cycas

B. Pinus

C. Sunflower

D. Maize

Answer: D

Watch Video Solution

15. Closed vascular bundles lack

A. Cambium

B. Pith

C. Ground tissue

D. Conjunctive tissue

Answer: A

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16. Companion cells are closely accociated with

Or

Transport of food material in higher plants takes place through

A. Trichomes

B. Guard cells

C. Sieve elements

D. Vessel elements

Answer: C

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17. cork/bottle cork is formed from

A. Xylem

B. Vascular cambium

C. Dermatogen

D. Phellogen

Answer: D

Watch Video Solution

18. as compared to a dicot root, a monocot root has

A. More abundant secondary xylem

B. Mady xylem bundles

C. Inconspicuous annual rings

D. Relatively thicker periderm

Answer: B

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19. Function of companion cells is

A. Loading of sucrose inot sieve elements by passive transport

B. Loading of sucrose into sieve elements

C. Providing energy to sieve elements for active transport

D. Providing water to phloem

Answer: B

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20. Ground tissue includes

A. All tissues internal to endodermis

B. All tissues external to endodermis

C. All tissues except epidermis and vascular bundles

D. Epidermis and cortex

Answer: C

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21. In land plants the guard cells differ from other epidermal cells in having

A. Chloroplasts

B. Cytoskeleton

C. Mitochondria

D. Endoplasmic reticulum

Answer: A

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22. The cork cambium, cork and secondary cortex are collectively called

A. Phellem

B. Phelloderm

C. Phellogen

D. Peridem

Answer: D

 Watch Video Solution

23. Which one of the following is wrongly matched

A. Cassia-Imbricate aestivation

B. Root pressure- Guttation

C. Puccinia-Smut

D. Root - Exarch protoxylem

Answer: C

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24. Some vascular bundles are described as open because these

A. Possess conjunctive tissue between xylem and pholem

B. Are not surrounded by pericycle

C. Are surrounded by pericycle but no endodermis

D. Are capable of producing secondary xylem and pholem

Answer: D

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25. The chief water conducting elements of xylem in gymnosperms are

A. Tracheids

B. Vessels

C. Fibers

D. Transfusion tissue

Answer: A

Watch Video Solution

26. Which one of the following is not a lateral meristem

A. Intercalary meristem

B. Intrafascicular cambium

C. Interfascicular cambium

D. Phellogen

Answer: A

Watch Video Solution

27. heart wood differs from sapwood in

A. Being susceptible to pests and pathogens

B. Presence of rays and fibres

C. Absence of vesseles and parenchyma

D. Having dead and non-conducting elements

Answer: D

Watch Video Solution

28. Transport of food material in higher plants takes place through

A. Campanion cells

B. Transfusion tissue

C. Tracheids

D. Sieve elements

Answer: D

Watch Video Solution

29. Anatomically fairly old dicotyledonous root is distinguished from the dicotyledonous stem by

A. Absence of secondary pholem

B. Presence of cortex

C. Position of protoxylem

D. Absence of secondary xylem

Answer: C

 Watch Video Solution

30. The annular and spirally thickened conducting elements generally develop in the protoxylem when the root or stem is

A. Elongating

B. Widening

C. Differentiating

D. Maturing

Answer: D

Watch Video Solution

31. Palisade parenchyma is absent in leaves of

A. Mustard

B. Soybean

C. Grain

D. Sorghum

Answer: D

Watch Video Solution

32. In barely vascular bundles are

A. Closed and scattered

B. Open and in ring

C. Closed and radial

D. Open and scattered

Answer: A

 Watch Video Solution

33. Reduction in vascular tissue mechanical tissue and cuticle is characteristic of

A. Mesophytes

B. Ephiphytes

C. Hydrophytes

D. Xerophytes

Answer: C

Watch Video Solution

34. Vascular tissues in flowering plants develop from

A. Dermatogen

B. Phellogen

C. Plermoe

D. Perjiblem

Answer: C

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35. The length of different internodes in a culm of sugarcane is variable because

A. Intercalary meristem

B. Shoot apical meristem

C. Position of axillary buds

D. Size of leaf lamina at the node below each internode

Answer: A

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36. For a critical study of secondary growth in plants, which one of the following pairs is suitable

A. Wheat and maiden hair fern

B. Sugarcane and sunflower

C. Teak and pine

D. Deodar and fern

Answer: C

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37. Passage cells are thin walled cells found in

A. Central region of style through which the pollen tube grows towards the ovary.

B. Endodermis of roots facilitating rapid transport of water from cortex to pericycle .

C. Pholem elements that serve as entry points for substances for transport to other plant parts.

D. Testa of seed to enable emergence of growing embryonic axis during seed germination.

Answer: B

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38. A common structural feature of vessel elements and sieve tube elements is

A. Thick secondary walls

B. Pores on lateral walls

C. Presence of P-protein

D. Enucleate condition

Answer: D

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39. In a woody dicotyledonous tree, which of the following parts wall mainly consist of primary tissues

A. Stem and root

B. All parts

C. Shoot tips and root tips

D. Flowers, fruits and leaves

Answer: D

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40. Meristematic tissue responsible for increase in girth of tree trunk is

A. Apical meristem

B. Intercalary meristem

C. Lateral meristem

D. Phellogen

Answer: C

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41. Axillary bud and terminal bud are derived from the activity of

A. Lateral meristem

B. Intercalary meristem

C. Apical meristem

D. Parenchyma

Answer: C

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42. Procambium is situated just behind apical meristem. Procambium gives rise to

A. Primary vascular bundle

B. Fascicular cambium

C. Cork cambium

D. Both (1) and (2)

Answer: D

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43. The cells of the quiescent centre are characterised by

A. Having dense cytoplasm and prominent nuclei

B. Having light cytoplasm and small nuclei

C. Dividing regularly to add to the corpus

D. Dividing regularly to add to tunica

Answer: B

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44. Apical meristem of root is present

A. Only in radicals

B. Only in tap roots

C. Only in adventitious roots

D. In all the roots

Answer: D

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45. Which one of the following is not true about 'sclereids'?

A. These are groups of living cells

B. These are found in nut shells, guava pulp, pear

C. These are also called stone cells

D. These are form of sclerenchyma

Answer: A

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46. Chlorenchyma is known to develop in the

A. Cytoplasm of Chlorella

B. Mycelium of a green mould such as Aspergillus

C. Capsule of a moss

D. Pollen tube of Pinus

Answer: C

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47. Vessels are found in:-

A. All angiosperms and some gymnosperm

B. Most of angiosperms and few gymnosperms

C. All angiosperms, all gymnosperms and some pteridophyta

D. All pteridophyta

Answer: B

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48. where do the casparian bands occur

A. Endodermis

B. Exodermis

C. Pericycle

D. Epidermis

Answer: A

Watch Video Solution

49. Vascualr bundles in monocotyledons are considered closed because

A. Xylem is surrounded all around by pholem

B. There are no vessels with perforations

C. A bundle sheath surrounds each bundle

D. There is no secondary growth

Answer: D

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50. At maturity which of the following is enucleate ?

A. Palisade cell

B. Cortical cell

C. Sieve cell

D. Companion cell

Answer: C

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51. What happens during vascularisation in plants ?

A. Differentiation of procambium, formation of primary pholem followed by formation of primary xylem

B. Differentiation of procambium followedby the formation of primary pholem and xylem simultaneously

C. Formation of procambium, secondary pholem and xylem simulataneously

D. Differentiation of procambium followed by the formation of secondary xylem

Answer: B

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52. Which of the following statements is true?

A. Vessels are multicellular is true?

B. Tracheids are multicellular with narrow lumen

C. Vessels are unicellular with narrow lumen

D. Tracheids are unicellular with wide lumen

Answer: D

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53. If four radial vascular bundles are present, then the structure will be

A. Dicot root

B. Monocot root

C. Dicot root

D. Monocot stem

Answer: A

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54. In which of the following plant sunken stomata are found : -

A. Nerium

B. Hydrilla

C. Mango

D. Guava

Answer: A

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55. Gymnosperms are also called soft wood spermatophytes because they lack

A. Thick-walled tracheids

B. Xylem fibres

C. Cambium

D. Phloem fibres

Answer: B

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56. In an annual ring, the light coloured part is known as

A. Early wood

B. Late wood

C. Heartwood

D. Sapwood

Answer: D

Watch Video Solution

57. As a tree grows older, which increases rapidly in thickness

A. Heart wood

B. Sap wood

C. Pholem elements that serve as entry points for substances for transport to other plant parts.

D. Cortex

Answer: A

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58. Diffuse porous woods are characterstic of plants growing in

A. Alpine region

B. Cold winter regions

C. Temperate climate

D. Tropics

Answer: D

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59. Lenticles are involved in

A. Gaseous exchange

B. Food transport

C. Photosynthesis

D. Transpiration

Answer: A

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60. The periderm includes

A. Secondary pholem

B. Cork

C. Cambium

D. All of these

Answer: B

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61. Which of the following meristems is responsible for extrastelar secondary growth in dicotyledonous stem

A. Interfascicular cambium

B. Intercalary meristem

C. Phellogen

D. Intrafascicular cambium

Answer: C

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Section D Assertion Reason Type Questions

1. Assertion: In maize stem, endodermis is present between general cortex and pericycle.

Reason: Eustele is present in maize Stem.

A. If both Assertion & Reason are true and the reason is the correct expalanation of the assertion. Then mark (1).

B. If Assertion & Reason are true but the reason is not the correct explanation of the assertion, then mark (2)

C. If Assertion is true statement but Reason is false, then mark (3).

D. If both Assertion and Reason are false statements, then mark (4)

Answer: D

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2. A: Bast fibres are collenchymatous fibres.

R: Fibres are absent in secondary phloem.

A. Both Assertion & Reason are true and the reason is the correct explanation of the assertion.

B. Assertion & Reason are true but the reason is not the correct explanation of the assertion.

C. Assertion is true statement but Reason is false.

D. Both Assertion and Reason are false statements.

Answer: D

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3. A: Oldest layer of sapwood lies just outside vascualr cambium.

R: Sapwood contains actively conducting vessels and occupies central part of stem.

A. If both Assertion & Reason are true and the reason is the correct expalanation of the assertion. Then mark (1).

B. If Assertion & Reason are true but the reason is not the correct explanation of the assertion, then mark (2)

C. If Assertion is true statement but Reason is false, then mark (3).

D. If both Assertion and Reason are false statements, then mark (4)

Answer: D

Watch Video Solution

4. A: Bark is the tissue outside steler cambium.

R: Bark is formed due to the activitity of phellogen only.

A. If both Assertion & Reason are true and the reason is the correct expalanation of the assertion. Then mark (1).

B. If Assertion & Reason are true but the reason is not the correct explanation of the assertion, then mark (2)

C. If Assertion is true statement but Reason is false, then mark (3).

D. If both Assertion and Reason are false statements, then mark (4)

Answer: C

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5. A: According to Clowes, there are three histogens in monocot root.

R: In dicot roots, innermost groups of initials form root cap.

A. If both Assertion & Reason are true and the reason is the correct expalanation of the assertion. Then mark (1).

B. If Assertion & Reason are true but the reason is not the correct explanation of the assertion, then mark (2)

C. If Assertion is true statement but Reason is false, then mark (3).

D. If both Assertion and Reason are false statements, then mark (4)

Answer: D

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6. A: Intercalary meristems are commonly located at the base of leaves, above the nodes or below the nodes.

R: Vacuoles are large sized in the cells of intercalary meristem.

A. If both Assertion & Reason are true and the reason is the correct expalanation of the assertion. Then mark (1).

B. If Assertion & Reason are true but the reason is not the correct explanation of the assertion, then mark (2)

C. If Assertion is true statement but Reason is false, then mark (3).

D. If both Assertion and Reason are false statements, then mark (4)

Answer: C

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7. A: Cells of sclerenchyma have thickened secondary walls.

R: Cells have deposition of lignin.

A. If both Assertion & Reason are true and the reason is the correct expalanation of the assertion. Then mark (1).

B. If Assertion & Reason are true but the reason is not the correct explanation of the assertion, then mark (2)

C. If Assertion is true statement but Reason is false, then mark (3).

D. If both Assertion and Reason are false statements, then mark (4)

Answer: A

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8. A: Sieve tubes and companion cells are related ontogenetically.

R: Both develop from same mother cell.

A. If both Assertion & Reason are true and the reason is the correct expalanation of the assertion. Then mark (1).

B. If Assertion & Reason are true but the reason is not the correct explanation of the assertion, then mark (2)

C. If Assertion is true statement but Reason is false, then mark (3).

D. If both Assertion and Reason are false statements, then mark (4)

Answer: A

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9. A: In monocot roots, pericyle gives rise to lateral roots and cork cambium.

R: It has tetrach vascualr bundles usually.

A. If both Assertion & Reason are true and the reason is the correct expalanation of the assertion. Then mark (1).

B. If Assertion & Reason are true but the reason is not the correct explanation of the assertion, then mark (2)

C. If Assertion is true statement but Reason is false, then mark (3).

D. If both Assertion and Reason are false statements, then mark (4)

Answer: D

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10. A: Complementary cells are cut-off by phellogen towards outside.

R: Phellogen is partially secondary in origin.

A. If both Assertion & Reason are true and the reason is the correct expalanation of the assertion. Then mark (1).

B. If Assertion & Reason are true but the reason is not the correct explanation of the assertion, then mark (2)

C. If Assertion is true statement but Reason is false, then mark (3).

D. If both Assertion and Reason are false statements, then mark (4)

Answer: C

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