



BIOLOGY

BOOKS - NIKITA PUBLICATION

Plant Tissues & Anatomy

Example

1. Which component brings about important processes in the living organisms?



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2. What is the tissue?



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3. A fresh section was taken by a student but he was very disappointed because there were only few green and most colourless cells. Teacher provided a pink colour solution. The section was immersed in this solution and

when observed it was much clearer. What is the magic?



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4. While observing a section many scattered vascular bundles could be seen. Teacher said but in spite of this large number the stem cannot grow in girth. Why?



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5. A section of the stem had vascular bundles, where tissue was wrapped around the other. How will you technically describe it?



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6. There were two cut logs of wood lying in the campus. One had growth rings and other didn't. Teacher said it is due to differences in their pattern of growth which is dependent on season. How?





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7. While on the trip to Kashmir, Pintoo observed that cut portions of large trees shows distinct rings, which he never found in Maharashtra. Why is so?



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8. Student found a wooden stopper in lab. He was told by an old lab attendant that it is

there for many years. He kept thinking how it did not rot?



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9. A student was observing a slide with no label under microscope. The section had some vascular bundles scattered in the ground tissue. It is section of a monocot stem! He exclaimed. No! It is section of fern rachis, said the teacher. Teacher told to observe vascular bundle again. Student agreed. Why?



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10. Student while observing a slide of leaf section observed many stomata on the upper surface. He thought he has placed slide upside down. Teacher confirmed it is rightly placed. Explain.



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11. Product of photosynthesis is transported from the leaves to various parts of the plants

and stored in some cell before being utilised.

What are the cells/ tissues that store them?



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12. Protoxylem is the first formed xylem. If the protoxylem lies next to phloem what kind of arrangement of xylem would you call it?



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13. What is the function of phloem parenchyma?



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14. What is present on the surface of the leaves which helps the plant prevent loss of water but is absent in roots?



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15. What is the epidermal cell modification in plants which prevents water loss?



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16. What part of the plant would show the following:

Radial vascular bundle



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17. What part of the plant would show the following:

Polyarch xylem



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18. What part of the plant would show the following:

Well developed pith



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19. What are the cells that make the leaves curl in plants during water stress?



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20. What constitutes the cambial ring?



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21. Give one basic functional difference between phellogen and phelloderm.





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22. Arrange the following in the sequence you would find them in a plant starting from the periphery - phellem, phellogen, phelloderm.



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23. If one debarks a tree, what parts of the plant is being removed?



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24. The cross-section of a plant material showed the following features when viewed under the microscope.

the vascular bundles were radially arranged.

Four xylem strands with exarch conditions of protoxylem.

To which organ should it be assigned?



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25. What do hard wood and soft wood stand for?



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26. Write a note on parenchyma.



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27. Describe sclerenchyma fibre.



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28. Write note on characteristics of meristematic tissue.



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29. Sketch and label T.S. of phloem tissue.



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30. Concentric vascular bundles are always closed. Describe.



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31. How is arrangement of Vascular Bundle in dicot and monocot stem?



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32. How is structure of vascular bundles of the root?



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33. Why vascular bundles of dicot stem are described as conjoint, collateral and open?



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34. Write short notes on the following points.

Structure of stomata.



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35. Write short notes on the following points.

Structure of stomata.



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36. Differentiate between Vascular Bundle of Monocot and Vascular Bundle of Dicot.



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37. Differentiate between Xylem functioning and Phloem functioning.



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38. What is Carbon dating?

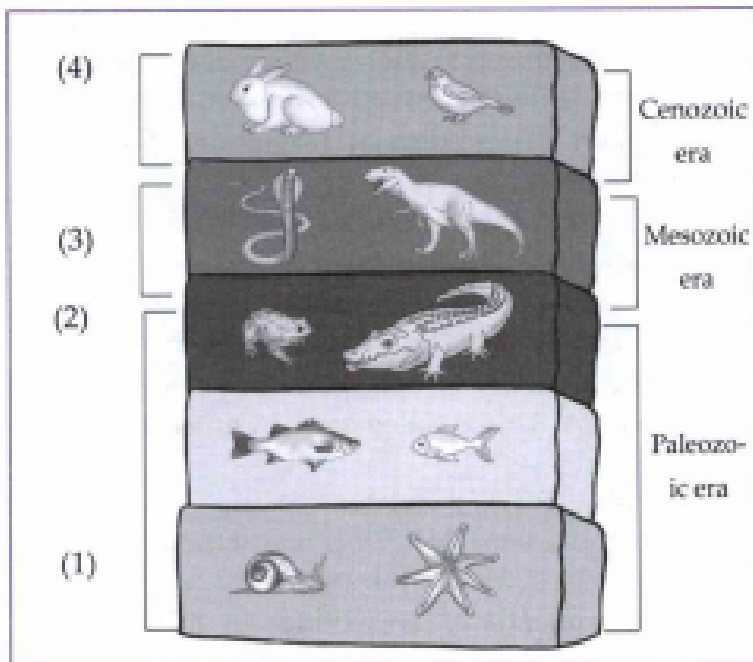
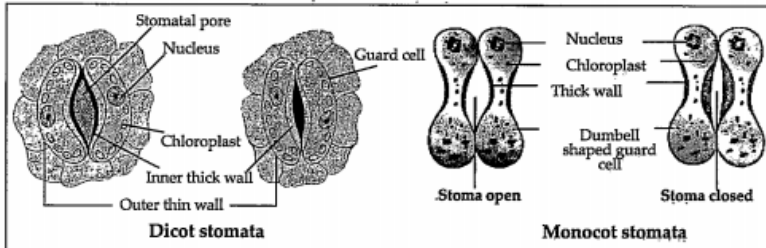


Fig. 1.6: Structure of ground level and fossils



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39. Write the information related to diagrams given below.



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40. Distinguish between Dicot and Monocot leaf on the basis of following characters, Mesophyll cells



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41. While eating peach or pear it is usually seen that stone like structures get entangled in the teeth, what are these stone like structures called?



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42. What is the commercial source of cork?
How is it formed in the plant?



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43. Below is a plant fibre. From which part of the plant these are obtained

Coir



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44. Below is a list of plant fibres. From which part of the plant these are obtained

Hemp



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45. Below is a list of plant fibres. From which part of the plant these are obtained

Cotton



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46. Below is a list of plant fibres. From which part of the plant these are obtained

Jute



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47. Epidermal cells are often modified to perform specialized functions in plants. Name some of them and function they perform.



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48. The lawn grass (*Cynodon dactylon*) needs to be removed frequently to prevent its overgrowth. Which tissue is responsible for its rapid growth?



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49. Plants require water for their survival. But when watered excessively, plants die. Discuss.



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50. A transverse section of the trunk of a tree shows concentric rings which are known as growth rings. How are these rings formed? What is the significance of these rings?



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51. Trunks of some of the aged tree species appear to be composed of several fused trunks. Is it a physiological or anatomical abnormality? Explain in detail



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52. What is the difference between lenticels and stomata?



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53. Write the precise function of

Sieve tube



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54. Write the precise function of

Interfasicular cambium



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55. Write the precise function of

Collenchyma



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56. Write the precise function of

Aerenchyma



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57. The stomatal pore is guarded by two kidney shaped guard cells. Name the epidermal cells surrounding the guard cells. How does a guard cell differ from an

epidermal cell? Use a diagram to illustrate your answer.



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58. Point out the differences in the anatomy of, leaf of peepal (*Ficus religiosa*) and maize (*Z'ea mays*). Draw the diagrams and label the differences.



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59. Palm is a monocotyledonous plant, yet it increases in girth. Why and how?



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60. Describe various types of vascular bundles.



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61. Distinguish between anatomy of Dicot and Monocot roots.



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62. Differentiate between dicot & monocot leaves.



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63. Give an account of bark.



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64. Describe Collenchyma.



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65. Describe the structure of Xylem.



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66. Explain the classification of meristems on the basis of origin and development.



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67. Write the difference between Spring wood/early wood and Autumn wood/late wood.



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68. Give an account of cork cambium.



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69. State the location and function of different types of meristem.



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70. Cork cambium forms tissues that form the cork. Do you agree with this statement? Explain.



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71. Distinguish between anatomy of Dicot and Monocot roots.



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72. Draw illustration to bring out anatomical difference between Monocot stem : Dicot stem.



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73. The transverse section of a plant material shows the following anatomical features, (a) the vascular bundles are conjoint, scattered and surrounded by sclerenchymatous bundle sheaths (b) phloem parenchyma is absent. What will you identify it as?



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74. Why xylem and phloem are called as complex tissue





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75. What is stomatal apparatus? Explain the structure of stomata with a labelled diagram.



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76. Name the three basic tissue systems in the flowering plants. Give the tissue names under each system.



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77. How is the study of plant anatomy useful to us?



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78. What is periderm? How does periderm formation take place in dicot stem?



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79. With the help of a neat labelled diagram, describe the internal structure of dorsiventral leaf. Draw neat labelled diagram: T.S. of Dicot leaf.



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80. The arrangement of ovules within the ovary is known as placentation. What does the term placenta refer to? Draw various types of

placentations in the flower as seen in T.S. and V.S.



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81. Deciduous plants shed their leaves during hot summer or in autumn. This process of shedding of leaves is called abscission. Apart from physiological changes what anatomical mechanism is involved in the abscission of leaves.



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82. Is Pinus an evergreen tree? Comment.



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83. Each of the following terms has some anatomical significance. What do these terms mean? Explain with the help of line diagrams.

Plasmodesmata



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84. Each of the following terms has some anatomical significance. What do these terms mean? Explain with the help of line diagrams.

Middle lamella



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85. Each of the following terms has some anatomical significance. What do these terms mean? Explain with the help of line diagrams.

Secondary wall



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86. Distinguish between the following:

Exarch and endarch condition of protoxylem.



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87. Distinguish between the following:

Stele and vascular bundle



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88. Distinguish between the following:

Protoxylem and metaxylem



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89. Write the difference between
Intrafascicular and Interfascicular cambium.



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90. Distinguish between the following:

Open and closed vascular bundles



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91. Distinguish between the following:

Stem hair and root hair



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Exercise

1. Location or position of meristematic regions is divided into.....types.

A. one

B. two

C. three

D. none of the above

Answer:



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2. Cambium is also called..... .

- A. apical meristem
- B. intercalary meristem
- C. lateral meristem
- D. none of the above

Answer:



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3. Collenchyma is a type of.....tissue.

A. living

B. dead

C. living and dead

D. none of the above

Answer:



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4.is a complex permanent tissue.

- A. Parenchyma
- B. Schlerenchyma
- C. living and dead
- D. Xylem

Answer:



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5. Mesophyll tissue is present in..... .

A. roof

B. stem

C. leaf

D. flower

Answer:



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6. Which of the following meristem is called as embryonal or primordial meristem... Which meristem forms primary permanent tissue of primary plant body..

- A. Primary meristem, secondary meristem
- B. secondary meristem, primary meristem
- C. promeristem, primary meristem
- D. tertiary meristem, primary meristem

Answer:



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7. The examples of primary meristem are

- A. protoderm
- B. procambium
- C. ground meristem
- D. all of these

Answer:



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8. Which meristem is responsible for growth, elongation of organs, occurs at the tip of roots, shoots.... and meristem present at base of node, internode, base of leaf is.....

- A. apical, intercalary
- B. intercalary , apical
- C. promeristem, intercalary
- D. cambium, intercalary

Answer:



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9. Which of the following is false statement about lateral meristem

A. initial cells divide mainly in one plane (periclinal)

B. it increase diameter of organ

C. it is found in gymnosperm & dicots

D. it is common in all angiosperms

Answer:



10. List -I (Meristems) List-II (Tissue)

- | | |
|------------------------|-----------------------------|
| A) Lateral | i) Internodes |
| B) Intercalary | ii) Root tip |
| C) Apical | iii) Vascular Cambium |
| D) Lateral & Secondary | iv) Interfascicular cambium |

A. A-iv, B-I, C-iii, D-ii

B. A-I, B-ii, C-iv, D-iii

C. A-iii, B-I, C-ii, D-iv

D. A-iv, B-iii, C-ii, D-I

Answer:



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11. Select the incorrect pair out of the following.



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12. Parenchyma cells having chloroplasts constitute

A. Chlorophylls parenchyma

B. Collenchyma

C. Chlorenchyma

D. Aerenchyma

Answer:



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13. In hydrophytes aerenchyma is type of parenchyma helps to ...

- A. give rigidity to plant body
- B. to give mechanical support
- C. acts as packing material
- D. providing buoyancy in hydrophytes

Answer:



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14. Parenchyma differ from collenchymas in its:

- A. Cell wall composition

B. Thickness of cell wall

C. Cytoplasmic content

D. Having cell organelles and cytoplasm

Answer:



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15. Collenchyma is present in

A. hypodermis of dicot stem & leaves

B. dicot root

C. monocot stem

D. monocot root

Answer:



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16. Which of the following is wrong?

A. collenchymas consists of cells which are much thickened at the corners due to a deposition of cellulose, hemicellulose

and pectin, intercellular spaces are absent.

B. The collenchyma occurs in layers below the endodermis in dicotyledonous plants

C. Collenchymatous cells may be oval, spherical or polygonal and often contain chloroplasts.

D. These cells assimilate food when they contain chloroplasts.

Answer:



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17. Match Column-1 with Column-II and select the correct option from the codes given below.

Column-I	Column-II
A. Vessels	i) Cells are living function-storage of food
B. Trachids	ii) Cells possess highly thickened walls with obliterated central lumen
C. Xylem fibres	iii) Wide pipes in xylem of angiosperm
D. Xylem parenchyma	v) tube-like thick, lignified cells having tapering ends common in all tracheophytes

A. A-iv, B-iii, C-ii, D-I

B. A-ii, B-iv, C-iii, D-I

C. A-ii, B-iv, C-iii, D-I

D. A-iv, B-ii, C-iii, D-I

Answer:



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18. The cells of which tissue are living in beginning having protoplasm but dead,impermeablein later stage

- A. Parenchyma
- B. Collenchyma
- C. sclerenchyma
- D. chlorenchyma

Answer:



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19. Sclerenchyma consists of

- A. long, narrow cells with thick and lignified

B. sclerenchyma may be either fibres or sclereids.

C. they are usually dead and without protoplasts.

D. all of these

Answer:



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20. The sclereids are

A. spherical, oval or cylindrical, highly thickened dead cells with very narrow cavities (lumen)

B. These are commonly found in the fruit walls of nuts pulp of fruits like guava, pear and sapota seed coats of legumes and leaves of tea.

C. Sclerenchyma provide mechanical support to organs

D. all of these

Answer:



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21. Water conducting elements of Gymnosperms and primitive angiosperms are

- A. vessels
- B. xylem parenchyma
- C. tracheids
- D. fibre tracheids

Answer:



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22. The main water conducting elements of higher angiosperms and few gymnosperm are

- A. vessels
- B. xylem parenchyma
- C. tracheids
- D. fibre tracheids

Answer:



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23. Vessels are present in

A. some gymnosperms like gnetales

B. angiosperm

C. some pteridophytes

D. all of these

Answer:



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24. Identify the false statement

A. vessels are rounded in monocot & angular in dicot

B. advanced flowering plants produce tracheid & vessels

C. primary xylem is derived from procambium

D. all gymnosperms have tracheids & angiosperms have vessels only

Answer:



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25. Secondary xylem is formed from... during...

A. cork cambium, primary growth

B. vascular cambium, primary growth

C. interfascicular cambium, primary growth

D. vascular cambium, secondary growth

Answer:



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26. The balloon like outgrowth formed by xylem parenchyma into vessels are called as

A. Hydrathodes

B. tylose

C. Callose

D. bast

Answer:



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27. In phloem of gymnosperms

A. aluminous cells may be present

B. they lack sieve tubes and companion cells

C. sieve cells are present

D. all of these

Answer:



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28. All of the following statements is true except

A. A mature sieve element possesses a peripheral cytoplasm and a large vacuole but lacks a nucleus.

B. The functions of sieve tubes are controlled by the nucleus of companion cells

C. sieve tube controls the functions of companion cells

D. Phloem parenchyma is absent in most of the monocotyledons

Answer:



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29. All of the following are true except

A. All tissues except epidermis and vascular bundles, constitute the ground tissue

B. It consists of simple tissues such as parenchyma, collenchyma and sclerenchyma

C. Parenchymatous cells are present in cortex, pericycle, pith and medullary rays,

in the primary stems and roots & meso
phyll of leaves

D. Epidermis is usually single layered,
sclerenchymatous with a small amount
of cytoplasm lining the cell wall and a
large vacuole

Answer:



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30. In conjoint vascular bundle xylem & phloem are present in same radius, phloem present towards outer side cambium is present between them is called as

- A. conjoint, collateral
- B. conjoint, collateral, open
- C. bicollateral, open
- D. radial, open

Answer:



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31. In a dicot root :

- A. tetraarch condition
- B. diarch to hexarch condition
- C. polyarch condition
- D. octarch condition

Answer:



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32. The endodermis contain barrel shaped cells having casparian strips for

- A. entry of water
- B. prevent the entry of water
- C. prevent transport of food
- D. to increase strength

Answer:



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33. Which is incorrect:

A. The vascular bundles scattered in monocot stem & each surrounded by a sclerenchymatous bundle sheath

B. sclerenchymatous hypodermis, The phloem parenchyma is absent, and water containing cavities are present within the vascular bundles

C. Peripheral vascular bundles are generally smaller than the centrally located ones

D. Vascular bundles are conjoint and open

Answer:



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34. In monocot stem which of the following is/are true.

A. V.B in centre are large

B. V.B in periphery are small

C. V.B. conjoint, collateral, closed

D. all of these

Answer:



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35. Lateral conduction of water and mineral salts in an old dicot stem is performed by

A. Transfusion tissue

B. Pith rays

C. Vascular bundle

D. medullary rays

Answer:



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36. Grafting is not possible in monocots because they

A. Lack cambium

B. Have parallel vascular bundles

C. Are herbaceous

D. Have scattered vascular bundles

Answer:



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37. In dicot dorsiventral leaves abaxial epidermis having more stomata & mesophyll is

A. undifferentiated

B. differentiated into bundle sheath,
mesophyll

C. differentiated into palisade and spongy
parenchyma

D. spongy & hypodermal tissue

Answer:



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38. In Dicot & Monocot leaves

A. cambium absent

B. secondary growth absent

C. amphistomatic

D. both a & b

Answer:



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39. In monocot leaves

A. In grasses, adaxial epidermal cells along the veins modify themselves into large, empty, colourless bulliform cells

B. When bulliform cells in leaves absorb water and are turgid, the leaf surface is exposed

C. When they are flaccid due to water stress, they make the leaves curl inwards

to minimise water loss

D. all of these

Answer:



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40. A transverse section of stem is stained first with safranin and then with fast green following the usual schedule of double staining for the preparation of a permanent

slide. What would be the colour of the stained xylem and phloem?

- A. Red and green
- B. Green and red
- C. Orange and yellow
- D. Purple and orange

Answer:



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41. Match the followings and choose the correct option from below

- A) Meristem i. Photosynthesis, storage
- B) Parenchyma ii. mechanical support
- C) Collenchyma iii. Actively dividing cells
- D) Sclerenchyma iv. stomata
- E) Epidermal tissue v. sclereids

A. A-iii, B-iv, C-v, D-ii E-iv

B. A-iii, B-i, C-II, D-v, E-iv

C. A-ii, B-iv, C-v, D-i, E-iii

D. A-v, B-iv, C-iii, D-ii, E-i

Answer:



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42. Identify the tissue system from among the following.

A. Parenchyma

B. Xylem

C. Epidermis

D. Phloem

Answer:



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43. Cells of this tissue are living and show angular wall thickening. They also provide mechanical support. The tissue is

- A. Xylem
- B. Sclerenchyma
- C. Collenchyma
- D. Epidermis

Answer:



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44. Epiblema of roots is equivalent to

- A. Pericycle
- B. Endodermis
- C. Epidermis
- D. Stele

Answer:



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45. A conjoint and open vascular bundle will be observed in the transverse section of

A. Monocot root

B. Monocot stem

C. Dicot root

D. Dicot stem

Answer:



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46. Interfascicular cambium and cork cambium are formed due to

- A. Cell division
- B. Cell differentiation
- C. Cell dedifferentiation
- D. Redifferentiation

Answer:



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47. 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

Answer:



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48. In which of the following pairs of parts of a flowering plant is epidermis absent?

- A. Root tip and shoot tip
- B. Shoot bud and floral bud
- C. Ovule and seed
- D. Petiole and pedicel

Answer:



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