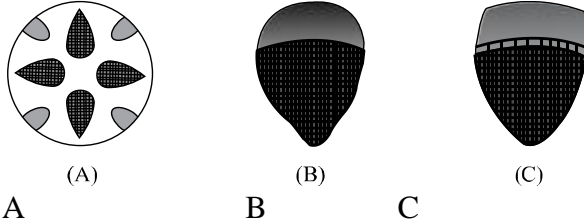


Shiksha Classes, Bhandara
Biology
Anatomy of flowering plants

- (1.) Xylem translocates
- | | |
|---|---|
| (a.) water and mineral salts only | (b.) water, minerals salts and some organic nitrogen only |
| (c.) water, mineral salts, some organic nitrogen and hormones | (d.) water only |

- (2.) These types of vascular bundles (A, B and C) are present in



- | | |
|---|---|
| (a.) Monocot leaf, Dicot stem, Monocot stem | (b.) Root, Dicot stem, Monocot stem |
| (c.) Root, Monocot stem, Dicot stem | (d.) Monocot root, Monocot leaf, Monocot stem |
- (3.) Axillary bud originates from
- | | |
|---------------------------|----------------------------|
| (a.) meristem | (b.) shoot apical meristem |
| (c.) root apical meristem | (d.) secondary meristem |
- (4.) Intercalary meristem is found between the
- | | |
|---------------------|---------------------------|
| (a.) mature tissue | (b.) apical root meristem |
| (c.) shoot meristem | (d.) two nodes |
- (5.) Epiblema of roots is equivalent to
- | | |
|----------------|-----------------|
| (a.) pericycle | (b.) endodermis |
| (c.) epidermis | (d.) stele |
- (6.) When we peel the skin off a potato tuber, we remove its
- | | |
|---------------|----------------|
| (a.) periderm | (b.) epidermis |
| (c.) cuticle | (d.) sapwood |
- (7.) A vessel less piece of stem possessing prominent sieve tubes would belong to
- | | |
|------------|--------------------|
| (a.) Pinus | (b.) eucalyptus |
| (c.) grass | (d.) Trochodendron |
- (8.) Primary meristem is
- | | |
|---|---------------------------|
| (a.) apical meristem | (b.) intercalary meristem |
| (c.) root apical meristem and shoot apical meristem | (d.) Both(a) and (b) |

- (9.) The vascular bundles in roots are always
- (a.) Cojoint (b.) Collateral
(c.) Radial (d.) None of these
- (10.) Cells of collenchyma have thickened corners due to the deposition of
- (a.) cellulose (b.) hemicellulose
(c.) pectin (d.) All of these
- (11.) What is the fate of primary xylem in a dicot root showing extensive secondary growth?
- (a.) It is retained in the centre of the axis. (b.) It gets crushed.
(c.) May or may not get crushed. (d.) It gets surrounded by primary phloem.
- (12.) Which one of the following cell types always divides by anticlinal cell division?
- (a.) Fusiform initial cells (b.) Root cap
(c.) Protoderm (d.) Phellogen
- (13.) Which of the following is not a characteristic feature of the anatomy of dicotyledonous root?
- (a.) Radial vascular bundles (b.) Secondary growth
(c.) Pith little or absent (d.) Vascular bundles 15 – 20
- (14.) The most abundant tissues in plants are
- (a.) meristematic tissues (b.) parenchyma tissues
(c.) collenchyma tissues (d.) sclerenchyma tissues
- (15.) Secondary xylem and phloem in dicot stem are produced by
- (a.) phellogen (b.) vascular cambium
(c.) apical meristems (d.) axillary meristems
- (16.) 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
- (17.) Sclerenchyma fibres are
- (a.) thick-walled (b.) elongated
(c.) pointed cells (d.) All of these
- (18.) Velamen tissue in orchids is found in
- (a.) shoot (b.) root
(c.) leaves (d.) flowers

- (19.) A transverse section of a 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
- (20.) Sclerenchyma mainly provides
- (a.) storage tissue to the plants (b.) mechanical support to the organs of plants
(c.) secretory tissue to the plants (d.) strength to monocot plants, specially their abundance in the layers below the epidermis
- (21.) Casparian strips occur in
- (a.) cortex (b.) pericycle
(c.) epidermis (d.) endodermis
- (22.) Water containing cavities in vascular bundles are found in
- (a.) sunflower (b.) maize
(c.) Cycas (d.) Pinus
- (23.) Complex tissues are
- (a.) made up of more than one kind of cells (b.) xylem and phloem
(c.) Both(a) and (b) (d.) None of these
- (24.) Match the following and choose correct answer.
- | Column-I | | Column-II | |
|-----------------------------|--|---------------------------------|--|
| (a.) Radial vascular bundle | | (1) Root | |
| (b.) Polyarch xylem | | (2) Monocot root | |
| (c.) Well-developed pith | | (3) Dicot stem and monocot root | |
- Codes
- | | A | B | C | | A | B | C |
|------|---|---|---|------|---|---|---|
| (a.) | 1 | 2 | 3 | (b.) | 2 | 1 | 3 |
| (c.) | 3 | 1 | 2 | (d.) | 2 | 3 | 1 |
- (25.) Vascular bundle having phloem at the centre enriched by xylem is known as
- (a.) bicollateral (b.) conjoint collateral
(c.) amphivasal (d.) Amphi-cribal
- (26.) A plant tissue, when stained, showed presence of hemicellulose and pectin in cell walls of its cells at their corners. The tissue represents
- (a.) collenchyma (b.) sclerenchyma
(c.) xylem (d.) meristem

- (27.) Cortex is the region found between
- (a.) epidermis and vascular bundle (b.) pericycle and endodermis
(c.) endodermis and pith (d.) endodermis and vascular bundle
- (28.) Which plant part contains polyarch condition of vascular bundle with a well- developed pith?
- (a.) Dicot root (b.) Monocot root
(c.) Dicot stem (d.) Monocot stem
- (29.) How many shoot apical meristems are likely to be present in a twig of a plant possessing 4 branches and 26 leaves?
- (a.) 26 (b.) 4
(c.) 5 (d.) 30
- (30.) Generally hypodermis in monocots is composed of
- (a.) parenchyma (b.) sclerenchyma
(c.) collenchyma (d.) chlorenchyma
- (31.) Centripetal xylem is found in which part of the plant?
- (a.) Root (b.) Stem
(c.) Leaf (d.) Petiole
- (32.) Identify the tissue system from among the following.
- (a.) Parenchyma (b.) Xylem
(c.) Epidermis (d.) Phloem
- (33.) Match the following and choose the correct answer.
- | Column-I | Column-II |
|-------------|---------------------------------------|
| (a.) Coir | (1) Phloem or bast fibre |
| (b.) Hemp | (2) Epidermal hair of seed |
| (c.) Cotton | (3) Mesocarp of coconut fruit (drupe) |
| (d.) Jute | (4) Phloem or bast fibre |
-
- | Codes | A | B | C | D |
|-------|---|---|---|---|
| (a.) | 3 | 1 | 2 | 4 |
| (c.) | 1 | 2 | 4 | 3 |
-
- | | | | | |
|------|---|---|---|---|
| (b.) | 2 | 4 | 3 | 1 |
| (d.) | 4 | 1 | 4 | 2 |
- (34.) In the roots of *Avena sativa* which types of vascular bundles are found?
- (a.) Collateral, conjoint and closed (b.) Radial V B with exarch xylem
(c.) Bicollateral, conjoint and closed (d.) Radial V B with endarch xylem

(35.) 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 pedicle

(36.) Match the items in **Column-I** with **Column-II** and choose the correct option.

Column-I

Column-II

(A) Radial vascular Bundle

(1) Cucurbita pepo

(B) Collateral vascular Bundle

(2) Dracaena

(C) Bicollateral vascular Bundle

(3) Roots of angiosperm

(D) Amphicribal vascular Bundle

(4) Sunflower stem

(E) Amphivasal vascular Bundle

(5) Fern

- | | Codes A | B | C | D | E | | | | | | |
|------|---------|---|---|---|---|------|---|---|---|---|---|
| (a.) | 3 | 4 | 1 | 5 | 2 | (b.) | 2 | 3 | 1 | 5 | 4 |
| (c.) | 3 | 4 | 5 | 1 | 2 | (d.) | 4 | 5 | 1 | 2 | 3 |
| (e.) | 3 | 1 | 2 | 4 | 5 | | | | | | |

(37.) For a successful graft, the adhesion between stock and scion is a must. Which one of the following is the earliest event towards a good graft?

- (a.) Production of plasmodesmata in the cells at the interface of stock and scion. (b.) Coordinated differentiation of vascular tissue between the stock and scion.
(c.) Regeneration of cortex and epidermis over the union of stock and scion. (d.) Production of callus tissue between the cells of stock and scion.

(38.) Select the vessel less angiosperm.

- (a.) Tetracentron (b.) Trochodendron
(c.) Wintera (d.) All of these

(39.) 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.

(40.) If there is more than one tunica layer in a stem apex, which among the following is most likely to happen?

- (a.) All the layers will develop into epidermal cells. (b.) Only the center layer will develop into epidermal cells.
(c.) All the layers will develop into cortex. (d.) Inner layer develops into cortex.

- (41.) Consider the following statements and choose the correct option given below.
 (A) In a dicot root, the vascular bundles are collateral and endarch.
 (B) The inner most layer of cortex in a dicot root is endodermis.
 (C) In a dicot root, the phloem masses are separated from the xylem by parenchymatous cells that are known as the conjunctive tissue.

- (a.) A is true, but B and C are false. (b.) B is true, but A and C are false.
 (c.) A is false, but B and C are true. (d.) C is false, but A and B are true.
 (e.) C is true, but A and B are false.

- (42.) Match the followings and choose the correct option from below.

Column-I

Column-II

- (A) Meristem
 (B) Parenchyma
 (C) Collenchyma
 (D) Sclerenchyma
 (E) Epidermal tissue

- (1) Photosynthesis, storage
 (2) Mechanical support
 (3) Actively dividing cells
 (4) Stomata
 (5) Sclereids

Codes A B C D E

- (a.) 1 3 5 2 4
 (c.) 2 4 5 1 3

- (b.) 3 1 2 5 4
 (d.) 5 4 3 2 1

- (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

- (44.) Grafting is not possible in monocots because they

- (a.) have scattered vascular bundles (b.) have parallel venation
 (c.) are herbaceous (d.) lack cambium

- (45.) The lawn grass (*Cynodon dactylon*) needs to be mowed frequently to prevent its over growth. Which tissue is responsible for its rapid growth?

- (a.) Intercalary meristem (b.) Apical meristem
 (c.) Lateral meristem (d.) Parenchyma

- (46.) Idioplasts are

- (a.) sclerenchymatous fibres found in the leaf of yucca. (b.) specialised parenchymatous cells which contain ergastic substances.
 (c.) collenchymatous cells possessing angular thickenings. (d.) crystals of calcium oxalate found in hard fruits.

(47.) Match the following with its function.

Column-I

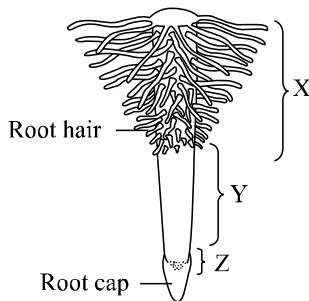
- (A) Sieve tube
- (B) Interfascicular Cambium
- (C) Collenchyma
- (D) Aerenchyma

Column-II

- (1) Provides buoyancy
- (2) Mechanical support
- (3) Formation of vascular cambium
- (4) Conduction of food

	Codes A	B	C	D
(a.)	4	3	2	1
(c.)	1	2	3	4

(b.)	3	4	2	1
(d.)	2	4	3	1



(48.)

Identify the different zones of a typical root shown in figure and select the correct answer regarding these.

X Y Z

- | | | | | |
|------|-------------------------------|-------------------------|-------------------------|-------------------------|
| (a.) | Zone of cell differentiation. | Zone of cell maturation | Zone of cell elongation | Zone of cell maturation |
| (b.) | Meristematic zone | Meristematic zone | Meristematic zone | Meristematic zone |
| (c.) | Meristematic zone | Zone of cell elongation | Zone of cell maturation | Zone of cell maturation |
| (d.) | Zone of cell maturation | Zone of cell elongation | Meristematic zone | Meristematic zone |

(49.) Vascular bundles in *Helianthus* are

- | | | | |
|------|-------------------------------|------|---------------------|
| (a.) | conjoint and collateral | (b.) | conjoint and closed |
| (c.) | conjoint, collateral and open | (d.) | collateral and open |

(50.) Companion cells are closely associated with

- | | | | |
|------|----------------|------|-----------------|
| (a.) | sieve elements | (b.) | vessel elements |
| (c.) | trichomes | (d.) | guard cells |

ANSWER

(1.)	c	(2.)	c	(3.)	b	(4.)	a	(5.)	c
(6.)	a	(7.)	d	(8.)	d	(9.)	c	(10.)	d
(11.)	a	(12.)	c	(13.)	d	(14.)	b	(15.)	b
(16.)	d	(17.)	d	(18.)	b	(19.)	a	(20.)	b
(21.)	d	(22.)	b	(23.)	c	(24.)	a	(25.)	c
(26.)	a	(27.)	a	(28.)	b	(29.)	c	(30.)	b
(31.)	a	(32.)	a	(33.)	a	(34.)	d	(35.)	a
(36.)	a	(37.)	c	(38.)	d	(39.)	b	(40.)	a
(41.)	c	(42.)	d	(43.)	c	(44.)	d	(45.)	b
(46.)	b	(47.)	a	(48.)	d	(49.)	c	(50.)	a

Shiksha Classes, Bhandara

EXPLANATION

- (1.) (c) Xylem in plants helps in the translocation of water, mineral salts, some organic nitrogen and hormones from the soil to the aerial parts of the plant. This process is known as the ascent of sap and it involves four major forces namely root pressure, capillarity, transpirational pull and cohesion and adhesion of water molecule and cell wall.
- (2.) (c) The vascular bundles in roots are radially arranged i.e., the xylem and phloem are present on separate radicle. Vascular bundle of monocot stem does not have cambium those are closed. The vascular bundles of dicot stem has cambium so they are referred to as open vascular bundles.
- (3.) (b) During the formation of leaves and elongation of stem, some cell left behind from shoot apical meristem. These constitute the axillary buds. Such buds are present in the axis of leaves and are capable of forming a branch of flower.
- (4.) (a) The meristem tissue which occurs between mature tissues is known as intercalary meristem. They occurs in grasses and regenerate the parts removed by grazing herbivores.
- (5.) (c) The outer most (Piliferous) layer is epidermis (epiblem(a) or rhizodermis. It is just one thick layer of cells which protects roots.
- (6.) (a) When we peel the skin of a potato tuber, we remove periderm.
- (7.) (d) A vessel less piece of stem possessing prominent sieve tubes would belong to Trochodendron.
- (8.) (d) Both apical meristem and intercalary meristem are primary meristems because they appear early in life of plants and contributes to the formation of primary plant body.
- (9.) (c) The vascular bundles in roots are always radially as there is presence of xylem and phloem tissues on different radii.
- (10.) (d) Cellulose, hemicellulose, pectin.
- (11.) (a) The fate of primary xylem in a dicot root showing extensive growth because it is retained in the centre of the axis.
- (12.) (c) Protoderm cell always divides by anticlinal cell division.
- (13.) (d) In dicots, vascular bundles are 15 to 20. These are open, exarch and take part in secondary growth in stem as well as roots.
- (14.) (b) Parenchyma is the most abundant and common tissue of the plant body. Parenchyma forms ground tissue in the non-woody or soft areas of the stem, leaves, roots, flowers, fruit, etc. The typical parenchyma is meant for storage of food. It is modified to perform special functions in many plant e.g., aerenchyma, chlorenchyma.
- (15.) (b) Secondary vascular tissues, i.e., secondary xylem and phloem are formed by the vascular cambium. It is produced by two types of meristems, fascicular or intrafascicular cambium is a primary meristem which occurs as strips in vascular bundles.
- (16.) (d) Each vascular bundle is conjoint, collateral, open and with endarch in protoxylem of dicot stem.
- (17.) (d) Sclerenchyma is of two types. (i) Fibre: The fibres are thick walled, elongated and pointed cells. Generally occurring in groups, in various parts of the plant. (ii) Sclereids: The sclereids are spherical, oval or cylindrical, highly thickened dead cells with very narrow cavity lumen.
- (18.) (b) Velamen tissue is water - absorbing tissue which can absorb atmospheric humidity. It is present in aerial root of orchids.
- (19.) (a) 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. Red and green colour of the stained xylem and phloem appear.
- (20.) (b) The sclerenchyma cells are commonly found in the fruit walls of nuts; pulp of fruits like guava, pear and sapota; seed coats of legumens and leaves of tea. Sclerenchyma provides mechanical support to plant organs.

(21.) (d) Casparian strips are found in endodermis of roots. It is a band of thickening which runs along the radial and tangential walls of endodermal cells. It is made up of suberin and lignin. Casparian strips prevent plasmolysis of endodermal cells. Cortex is found below epiblema. It is made up of thin-walled parenchymal cells. Epidermis is the outermost layer made up of thin-walled flattened and slightly elongated parenchymal cells. Pericycle is found below endodermis and it is made of parenchymatous cells.

(22.) (b) Stem of maize has water containing cavities in vascular bundles.

(23.) (c) Complex Tissue They are permanent tissue which contains more than one type of cells. All type of cells of a complex tissue work as a unit. The common complex permanent tissues are conducting tissues e.g., xylem and phloem.

(24.) (a)

(a) Radical vascular bundle

(1) Root

(b) Polyarch xylem

(2) Monocot root

(c) Well-developed pith

(3) Dicot stem and monocot stem

(25.) (c) When phloem is surrounded by xylem on all sides, such concentric vascular bundle is called amphivessel or leptocentric. Such vascular bundle is found in *Dracaena*, *Yacca*, *Aloe* etc.

(26.) (a) A plant tissue, when stained, showed the presence of hemicellulose & pectin in cell wall of its cells. The tissue represents collenchyma.

(27.) (a) Cortex tissue is found in between the epidermis and vascular bundles. It is multilayered, having 4–5 layers of cells. It is made up of parenchymatous cells with big intercellular spaces.

(28.) (b) Vascular bundles in monocot roots are radial, polyarch and exarch. Large number (more than six) of xylem and phloem groups alternate with each other. Well-developed pith is present in monocot root.

(29.) (c) Five shoot apical meristems are likely to be present in a twig of a plant possessing 4 branches and 26 leaves.

(30.) (b) Hypodermis is collenchymatous (green) in dicot stem and sclerenchymatous (non-green) in monocot stem.

(31.) (a) Centripetal xylem is found in roots.

(32.) (a) Simple tissue is made of only one type of cells so the origin of simple tissue is homogeneous. Parenchyma, Collenchyma and Sclerenchyma comes under simple tissues.

(33.) (a)

(a) Coir

- Monocarp of coconut fruit (drupe)

(b) Hemp

- Phloem or bast fibre

(c) Cotton

- Epidermal hair of seed

(d) Jute

- Phloem or bast fibre

(34.) (d) Roots of *Avena sativa* have radial vascular bundles with exarch xylem.

(35.) (a) Root and shoot dip does not have epidermal tissues.

(36.) (a) A–3, B–4, C–1, D–5, E–2

(37.) (c) Regeneration of the cortex and epidermis over the union of stock and scion in the earliest event towards good shaft.

(38.) (d) Vessels are present in almost all angiosperms, but there are 10 woody genera belonging to five families viz. Winteraceae (eg *Wintera*), Tetracantracheae (eg., *Tetracentron*), Trochodendraceae (eg., *Trochodendron*), Amborellaceae (*Amborella*) and Chloranthaceae in which vessels are absent.

(39.) (b) A quiescent centre is found in the centre of the root apex. Cell divisions are very few in the quiescent centre as there is very little synthesis of new proteins. Cells of quiescent centre have small nuclei and light cytoplasm.

(40.) (a) Epidermis is usually a single layered structure, present on the entire body surface of the plant and this makes epidermal tissue system. It consists of epidermis, cuticle, stomata unicellular hairs and multicellular trichomes. Whereas, parenchyma is a kind of tissue present in all organs of the plant, e.g., roots, stems, leaves, flowers, fruits and seeds. Xylem and phloem are the complex tissue found in all vascular plants.

(41.) (c) A is false, but B and C are true.

(42.) (d) Meristem It is a group of actively dividing cells which is responsible for the life long growth occurring in the plants. Parenchyma It is permanent tissue and widely distributed in plant body. It is mainly involved in photosynthesis in chlorophyll containing cells and also store food materials. Collenchyma The cells of collenchyma tissue have thickening at corners of cells and this provide mechanical strength to herbaceous green stems. Sclerenchyma This tissue is dead at maturity, have thickening along all sides of walls. Sclereids and fibre are these types of tissue. Epidermal tissue The epidermal tissue system forms the outer most covering of the whole plant body and comprises epidermal cells, stomata and the epidermal appendages the trichomes and hairs.

(43.) (c) Collenchyma This tissue provide mechanical support mainly to herbaceous young growing stem. The cells have angular thickening at the corners. Whereas, xylem is conductive complex tissue, transports water and mineral.

(44.) (d) A new variety is produced by joining parts of two different plants (with the help of cambium) is called grafting. In monocots cambium is absent, hence the parts of two different plants are unable to joint each other.

(45.) (b) Apical meristem: The meristem which occurs between mature tissues is known as intercalary meristem. They occur in grasses & regenerate parts removed by the grazing herbivores.

(46.) (b) Idioblasts are specialised non-green large sized parenchyma cells which possess inclusions or ingredients like tanning, oils, crystals etc.

(47.) (a)

(a) Sieve tube – Conduction of food

(b) Interfascicular cambium – Formation of vascular cambium

(c) Collenchyma – Mechanical support

(d) Aerenchyma – Provides buoyancy

(48.) (d) Root hair zone represents zone of differentiation because different types of primary tissues like xylem, phloem differentiate or mature in this region. Zone of elongation is about 4–8 mm in length. It lies behind the growing point. Cells of this region are newly formed cells which lose the power of division. They elongate rapidly. Meristematic zone is about 1 mm in length. The growing of root is sub terminal and lies protected below root cap. It is made up of compactly or closely arranged small thin walled isodiametric and meristematic cells which have dense protoplasm.

(49.) (c) Conjoint: A vascular bundle having both xylem and phloem together is called conjoint. Collateral: A vascular bundle in which the phloem lies towards outer side and xylem towards inner side is called collateral e.g., Sunflower. Collateral bundle having a cambium between xylem and phloem is said to be of the open type. e.g., Dicot stem. Vascular bundles are conjoint, collateral and open.

(50.) (a) Companion cells are connected with sieve elements by complex plasmodesmata.

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