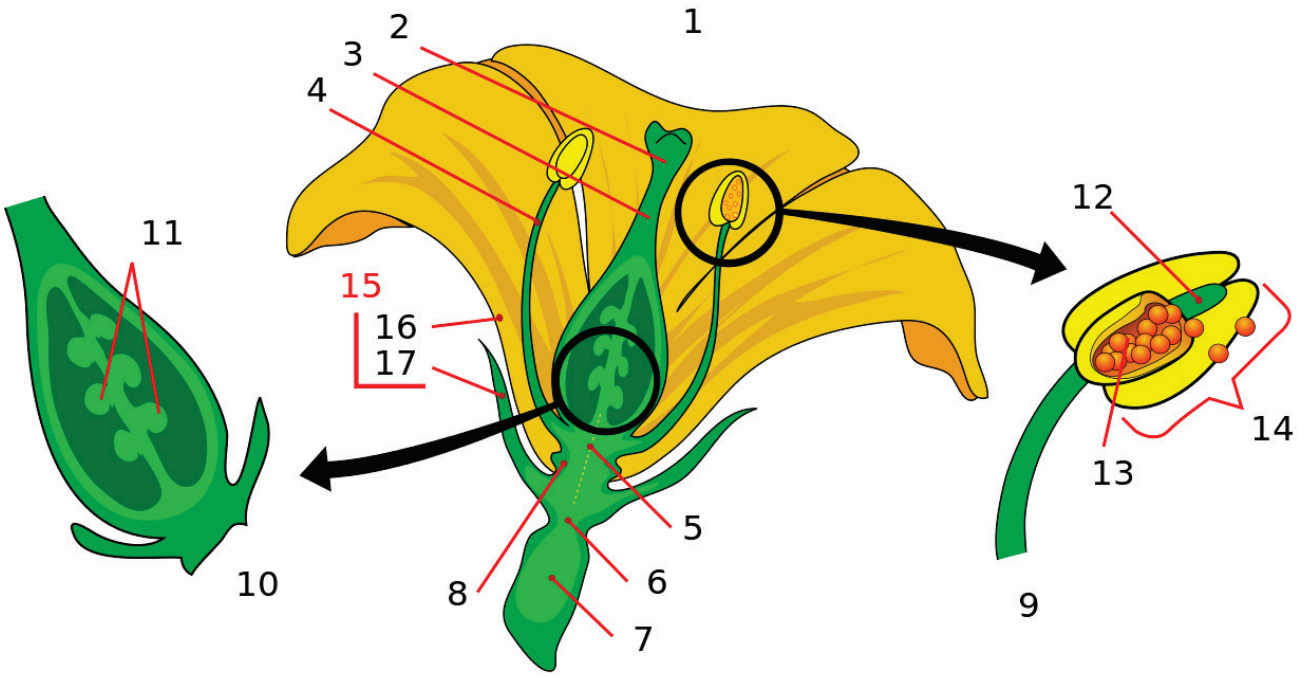
ANATOMY OF FLOWERING PLANTS



ANATOMY OF FLOWERING PLANTS

Anatomy

Anatomy is the study of internal structure of organisms. Plant anatomy includes organization and structure of tissues. Tissue is a group is cells having a common origin and usually performing a common function.

The Tissue

A group of cells having a common origin and usually performing common function are called tissues.

There are two types of tissues (i) Meristematic (ii) Permanent.

Meristematic Tissues: The meristematic tissue is made up of the cells which have the capability to divide. Meristems in plants are restricted to a specialized regions and responsible to the growth of plants.

Permanent Tissues: The permanent tissues are derived from meristematic tissue, are composed of cells, which have lost the ability to divide and have become structurally and functionally specialised.

Meristematic tissues:

There are three types of Meristem:

- Apical meristem
- Intercalary meristem
- Lateral meristem

Apical meristem: Meristematic tissue is a simple tissue composed of group of similar and immature cells which can divide and form new cells. The meristem which occurs at tips of roots and shoots are called apical meristem.

Intercalary meristem: Intercalary meristem occurs between mature tissues especially in grasses. Both apical meristems and intercalary meristems are primary meristems because they appear early in life of a plant and help to form the primary plant body.

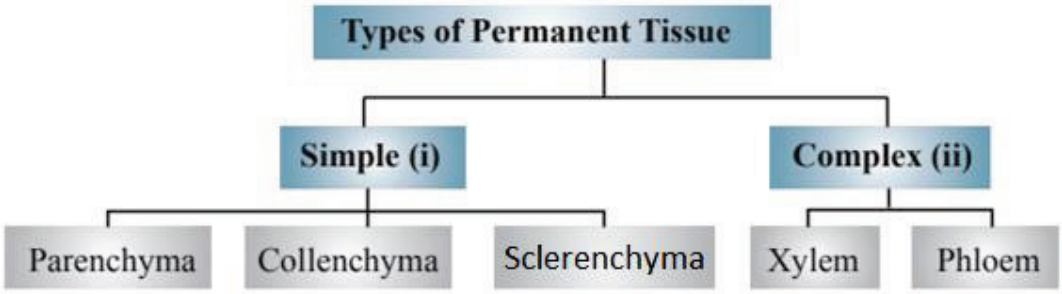
Lateral meristem: The meristem which occurs on the sides and takes part in increasing girth of the plants are called Lateral meristem. Intrafascicular cambium in the primary lateral meristem. Vascular cambium, cork cambium are secondary meristem.

Axillary bud: The buds which are present in the axils of leaves (Consist of cells left behind from shoot apical meristem) and are responsible for forming branches of flowers.

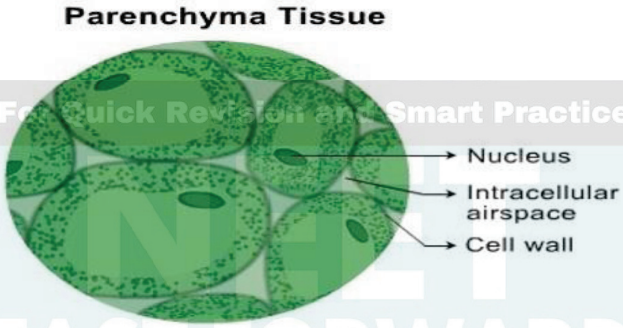
Permanent tissues

The permanent tissues are derived from meristematic tissue, are composed of

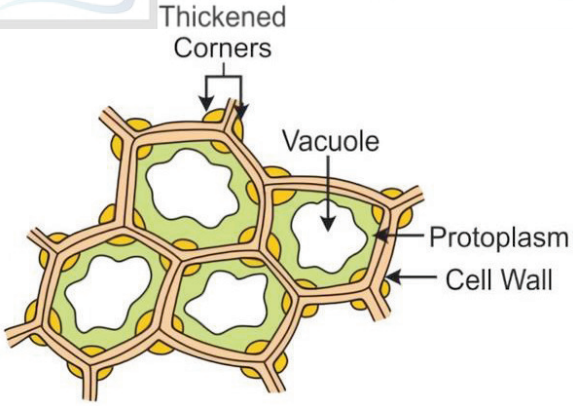
cells, which have lost the ability to divide and have become structurally and functionally specialized.



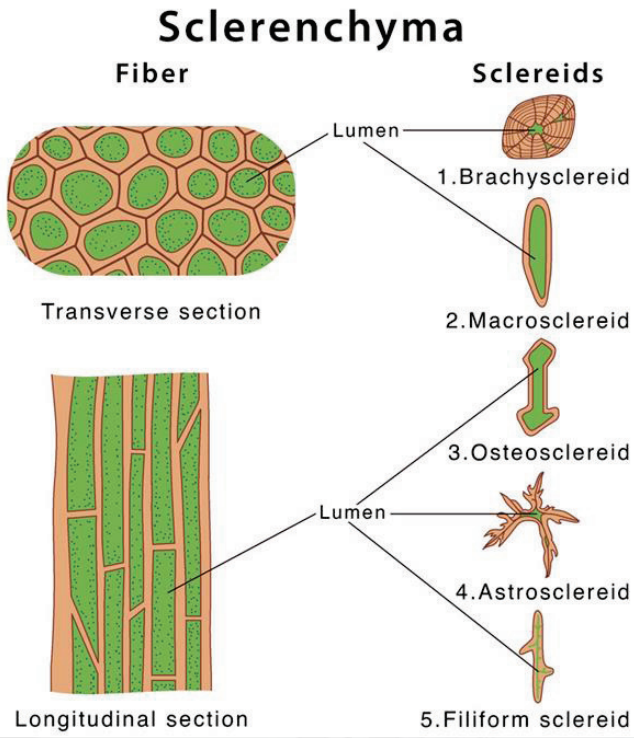
Parenchyma: Parenchyma is a simple permanent living tissue which is made up of thin-walled isodiametric cells. Each cell encloses a large central vacuole and peripheral cytoplasm containing nucleus. They are found in non-woody and soft areas of stem, root, leaves, fruits and flowers. They store the food and provide turgidity to softer parts of plant.



Collenchyma: Collenchyma consists of cells which are much thickened at corner due to cellulose, hemicellulose and pectin. Oval, spherical or polygonal often contain chlorophyll. They provide mechanical support to the growing parts of the plants like young stem.



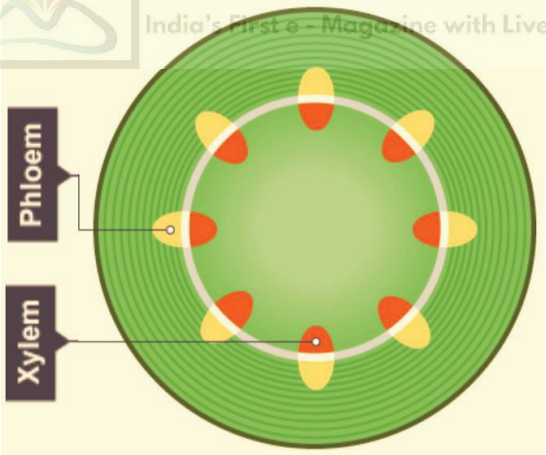
Sclerenchyma: Sclerenchyma are supportive tissue having highly thick-walled cells with little or no protoplasm due to deposition of cellulose or lignin. They are of two types: fibers and sclereids. They provide mechanical support to mature plant organs to tolerate bending, shearing, compression etc.



Complex tissue: Permanent tissues having all cells similar in structure and function are called simple permanent tissues and those having different kinds of cells are called complex tissue.

Xylem: Xylem consists of tracheid's vessels, xylem fibers and xylem parenchyma. It conducts water and minerals from roots to other parts of plant.

Phloem: Phloem consists of sieve tube elements, companion cells, phloem fibers and phloem parenchyma; Phloem transports the food material from leaves to various parts of the plant.



Endarch: Primary xylem is of two types- protoxylem and metaxylem. In stem, protoxylem lies in centre and metaxylem towards periphery. This type of primary xylem is called endarch.

Exarch: In roots, protoxylem lies in periphery and metaxylem lies towards the center. This type of primary xylem is called exarch.

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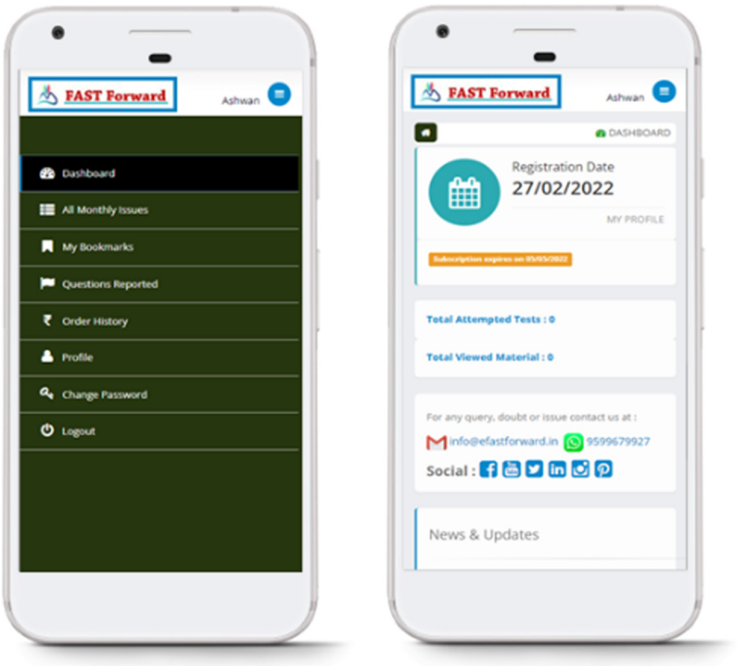

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