

ORGANS

An organ is a group of different tissues that perform a specific function

The plant bodies of flowering plants consists of organs i.e. roots, stems, leaves and flowers. Each organ is specialised in order to perform specific functions

DICOTYLENDOUS LEAF

Main functions of leaves:

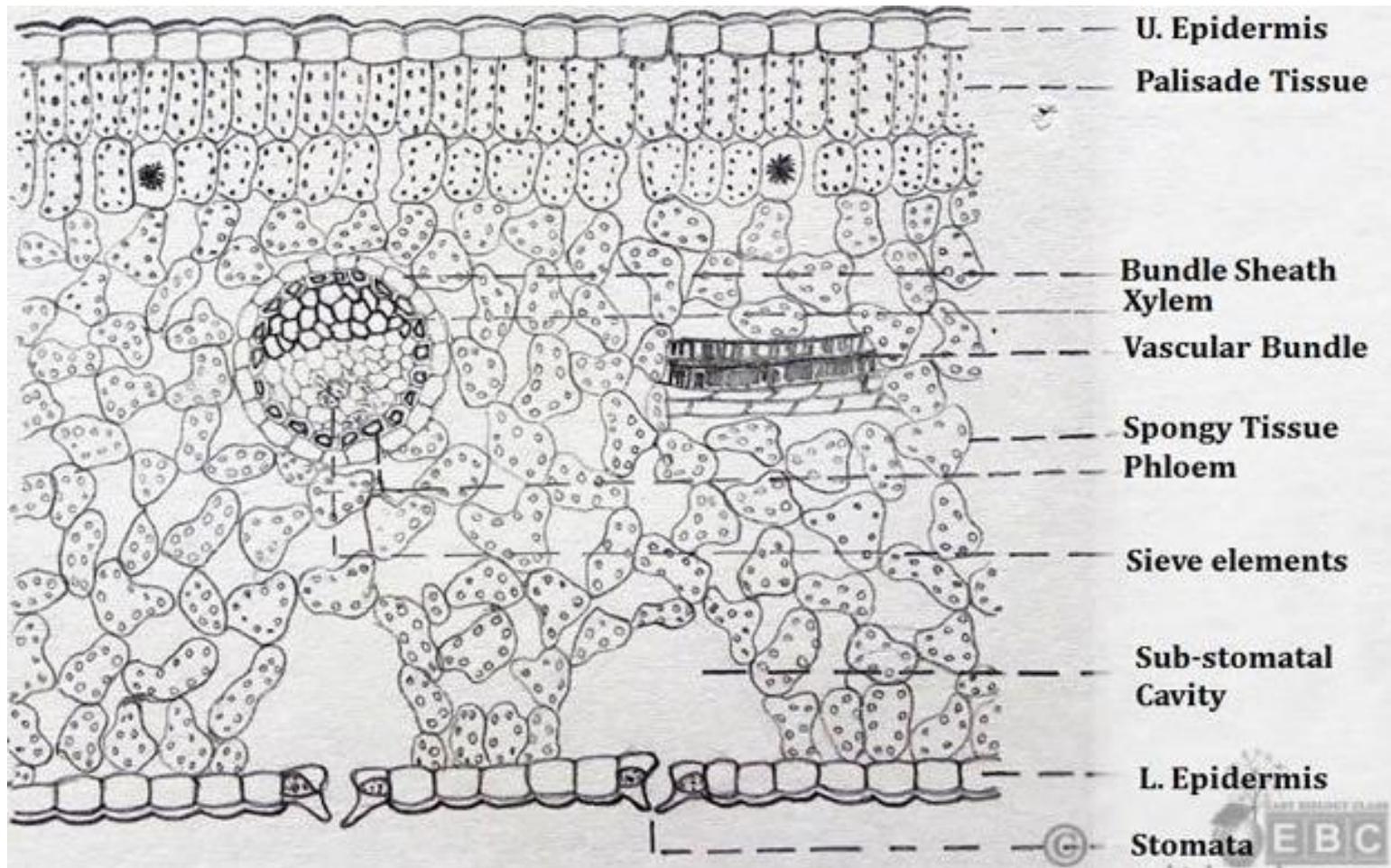
- trap sunlight for **photosynthesis**
- allow **gaseous exchange**
- **transport** water and produced nutrients

External structure of a leaf:

- large flat **lamina** (leaf blade) that is attached to the stem of the plant by means of a **petiole**
- in the axil between the stem and petiole an **axillary bud** develops out of which lateral branches or flowers grow
- the **veins** consist of xylem and phloem that are continuous with the xylem and phloem of the root and stem

DICOTYLENDOUS LEAF

Internal structure of a leaf:



3 main sections:

- epidermis
- mesophyll
- vascular bundles(veins)

Epidermis:

- upper and lower surfaces of leaf
- epidermis protects underlying tissues
- transparent to allow light through for photosynthesis
- Cuticle covers epidermis
- lower epidermal cells contain stomata for gas exchange

Mesophyll:

- **pallisade** and **spongy**

Pallisade mesophyll cells:

- elongated thin walled parenchyma just under the upper epidermis
- Cells contain lots of **chloroplasts** enabling them to absorb maximum amount of sunlight for photosynthesis
- cells arranged longitudinally, packed tightly, no intercellular space – largest surface area to absorb sunlight
- cell walls are thin for easy diffusion of gasses

Mesophyll:

Spongy mesophyll cells:

- lower mesophyll layer
- cells are round parenchyma cells, loosely packed
- contain large intercellular spaces – gas exchange
- contain chloroplasts but fewer than palisade mesophyll

Vascular bundles:

- xylem and phloem that are continuous from root and stem
- water is transported to the leaf moves by osmosis until it reaches mesophyll cells
- phloem transports organic nutrients from the leaf to other parts of the plant

CLASS ACTIVITY - DICOTYLENDOUS LEAF

1. From what does an axillary bud develop? And what grows from it.
2. What main functions are there to leaves?
3. What is osmosis?