

2. Plants Structure and Function

1. Seed Germination

(i) The process of sprouting of a small plant from the embryo of a seed on arrival of favourable conditions is called **seed germination**.

(ii) **Dormant seeds**: These are the seeds that do not germinate even after being provided with necessary conditions for germination.

(iii) **Pumule**: It is the portion above the cotyledon in a germinating seed that gives rise to shoots in future.

(iv) **Radicle**: It is the portion below the cotyledon in a germinating seeds that gives rise to roots in future.

2. Conditions Necessary for Seed Germination

(i) Sufficient amount of oxygen and water

(ii) Optimum temperature

- Roots absorb water and minerals from the soil.
- Roots also anchor the plant firmly to the soil.
- Roots are of two types - tap roots and fibrous roots.

Root Modifications

- Prop roots – Example: banyan tree
- Stilt roots – Example: maize and sugarcane
- Roots which helps in respiration – Example: *Rhizophora*

Stem

- Bears branches, leaves, flowers, and fruits
- Conducts water and minerals to all parts of the plant body
- Bears nodes and internodes

Stem modifications

- For storage – Example: Potato, ginger, turmeric.
- For support – Tendrils in cucumber, pumpkins, watermelon.
- For protection – Thorns in *Citrus*, *Bougainvillea*.
- For vegetative propagation – Tubers and rhizomes in potato and ginger respectively.



Leaf

- Performs the function of photosynthesis
- Consists of leaf base, petiole, and lamina
- Veins help in the transport of water to all leaf parts.
- Arrangement of veins is known as **venation**.
- Parallel venation is found in monocots. Example: Banana
- Reticulate venation is found in dicots. Example: Mango
- Leaves may be simple or compound.
- Pattern of arrangement of leaves on the stem is known as **phyllotaxy**. It may be alternate as in china rose, opposite as in *Calotropis* or whorled as in *Alstonia*.

Leaf modifications

- Tendrils- Example: Peas
- Spines- Example: Cactus
- Fleshy leaves for storage- Example: Onion and garlic
- Those plants that have flowers are called **flowering plants** while those that do not contain flower, seeds are called **non-flowering plants**.
- Parts of flower
 - Calyx, Corolla, Androecium and Gynoecium are the parts of a flower.
 - Sepals, petals, stamens, and pistil are their subparts.
 - Collection of sepals is known as calyx
 - Collection of petals is known as corolla.
 - Ovary contains one to numerous ovules.
 - Anther and filament are the parts of a stamen and collection of stamen is known as androecium
 - Stigma, style, and ovary are the parts of a pistil and collection of pistils are known as gynoecium.
- Types of flower
 - Bisexual flowers: Contain both male and female parts
 - Unisexual flowers: Contain either male or female part