Flower, Fruits and Seeds

Short notes:

Flower is the most beautiful and attractive part of a plant. These are available in different shapes, sizes and colours. It is the reproductive part of a plant. It produces fruits and seeds.

Structure of a flower –
The flower arises from the floral bud on the stem. It is attached on the axis by a structure called pedicel. The pedicel continuous to form slightly swollen tip called thalamus. It bears four consecutive whorls of flower. These are –

1. **Calyx –** It is the outermost whorl of a flower. It consists of green coloured leaf-like structures called sepals. The sepal protects the flower during bad stages.

2. **Corolla –** It is the second whorl of a flower. It consists of large, brightly-coloured, scented petals. Petals enclosed and protect the reproductive part of a flower. Corolla attracts insects like bees and butterflies for pollination.

3. **Androecium –** It is the third whorl of a flower. It forms the male reproductive part of a flower and consists of many male reproductive units. These units are called stamens. The stamen consists of the filament and the anther.
   - **i.** Filament – It is a long, thin, hair-like structure which bears yellowish sac like structures on its free end.
   - **ii.** Anther – An anther is a small, sac-like structure borne at the tip of the filament. Each anther contains many fine, powdery particles called pollen grains. Pollen grains play important role in plant reproduction as they contain male reproductive cells.

4. **Gynoecium –** it is the forth whorl of a flower. It constitutes the female reproductive part which is known as pistil. Pistil consists of carpels (female reproductive units). Each carpel consists of three parts –
   - **i.** Ovary – it contains one or more ovules
   - **ii.** Style – long, tube-like extension of the ovary
   - **iii.** Stigma – pollen grains are received here.

Types of flower –

1. **Complete flower** – A flower that shows all the four whorls. Example – hibiscus and rose
2. **Incomplete flower –** a flower that lacks of one or more such structures. Example – begonia and willow

Functions of a flower –

- Primary function is reproduction by producing fruits that contains seeds. Seeds help in multiplication of species.

Pollination –

The process which involves transfer of pollen grains from the anther to the stigma of same or another flower.

Kinds of pollination –

1. **Self pollination** –When pollen grains transfer from anther to stigma of same flower or flowers of the same plant.
2. **Cross pollination** – When pollen grains from anther of a flower are transferred to the stigma of another flower or another plant of same species.

Agents of pollination –

1. Pollination by insects
2. Pollination by animals
3. Pollination by wind
4. Pollination by water

Fertilization – The fusion of male and female gametes is called fertilization.

The Fruit – After fertilization the ovules grows to become seeds. A seed contains embryo and food for developing new plants. It has a tough protective coating called seed coat. The ovary of a flower can produce number of seeds.

After the process of fertilization, an ovary develops and becomes a fruit. When fruit is ripened, other parts of a flower dry up ad fall off. A fruit protects the seed.

Structure of a fruit – A fruits is made up of two parts.

1. ***Pericarp*** – it develops from ovary wall. It further consists of three parts
   i. **Epicarp** – It is thin, leathery part and is generally discarded.
   ii. **Mesocarp** – Fleshy, sweet edible part.
   iii. **Endocarp** – innermost hard layer which encloses the seed

2. **Seed** – it develops from ovule.

Types of fruits –

1. **Dry fruits –** whose pericarp is not distinguished. Example - nut, wheat and legumes
2. **Fleshy fruits –** whose pericarp is distinguished into three parts. Example – kiwi and cherry

Functions of fruits

- It protects the seed from extreme hot or cold weather conditions and animals.
- It is an important source of food for animals.

The Seed – The number and shape of seeds are different in different fruits.

Structure of Seed -

1. **Seed coat –** outer protective covering of seed
2. **Cotyledon –** the fleshy part of the seed. It also stores food for developing embryo
3. **Embryo –** It has two parts

i. **Plumule –** it develops into shoot
ii. **Radicle –** it develops into root

Types of seeds – According to numbers of cotyledons, seeds are of two types.

1. **Monocotyledonous seed** –contains only one cotyledons like wheat, bajra
2. **Dicotyledonous seed** – contains two cotyledons like mango, gram etc.

Germination of seeds - The process in which a seeds begins to grow.

Types of Germination –

1. **Epigeal germination –** the hypocotyl elongates rapidly and arches upwards pulling the cotyledons which move above the soil. This can be seen in dicotyledonous seeds. Example – bean, cotton etc.

2. **Hypogeal germination –** the epicotyl elongates and the cotyledons remain below the soil. It can be seen in monocotyledonous seeds. Example – pea, mango etc.

   Conditions necessary for germination – Water, air and suitable temperature are essential for seed germination. In the presence of these conditions the food stored inside the seed dissolves and provides energy to the growing embryo.