## Introduction

- Reproduction is the production of new individuals from their parents.
- All living organism reproduce their young ones.
- In plants there are different mode of reproduction.

## Modes of reproduction –

- Through are vegetative parts of the plant such as Roots, stems and leaves.
- Flowers are the reproductive part of a plant.
- Flowers give rise to the fruit and in fruits seeds are present which germinate and form new plants.
- Various types of reproductions are categorized into two types: -
    1. Asexual reproduction
    2. Sexual reproduction

1. In asexual reproduction plants reproduce their offspring without the production of seeds or spores.

For example: sugarcane, potato and rose plants show asexual reproduction.

2. In sexual reproduction plants reproduce their offspring from seeds.

For example: Mango, watermelon plants show sexual reproduction.

- **Asexual reproduction**: Reproduction of new plant without seeds are known an asexual reproduction.

a) **Vegetative propagation**:

- In vegetative propagation new plant is grown or propagated through the vegetative parts (stems, roots or leaves) of the parent plant.

**Activity - 1**

1. Cut a branch of rose with a node.
2. This piece of branch is known a cutting.
3. Bury the cutting in the soil.
4. Water the cutting every day and see its growth.

- Vegetative buds can also produce to new plants. Potato and Bryophyllum are the examples.
- Roots of some plants can also give rise to the new ones. Sweet potato and Dahlia are example.
- When plants produces by vegetative propagation they take less time to grow and bear flower and fruits earlier in comparison to those produced from seeds.

### b) Budding:

- Budding is a form of asexual reproduction in which bud of one plant is grafted onto the stem of another plant.
- Hydra and yeast are he example which show reproduction through budding.

### c) Fragmentation:

- Slimy green patches in ponds or other stagnant bodies are called algae.
- These algae grow and multiply rapidly by fragmentation.
- Fragmentation is process in which organism breaks up in multiple individual pieces to form new organism.

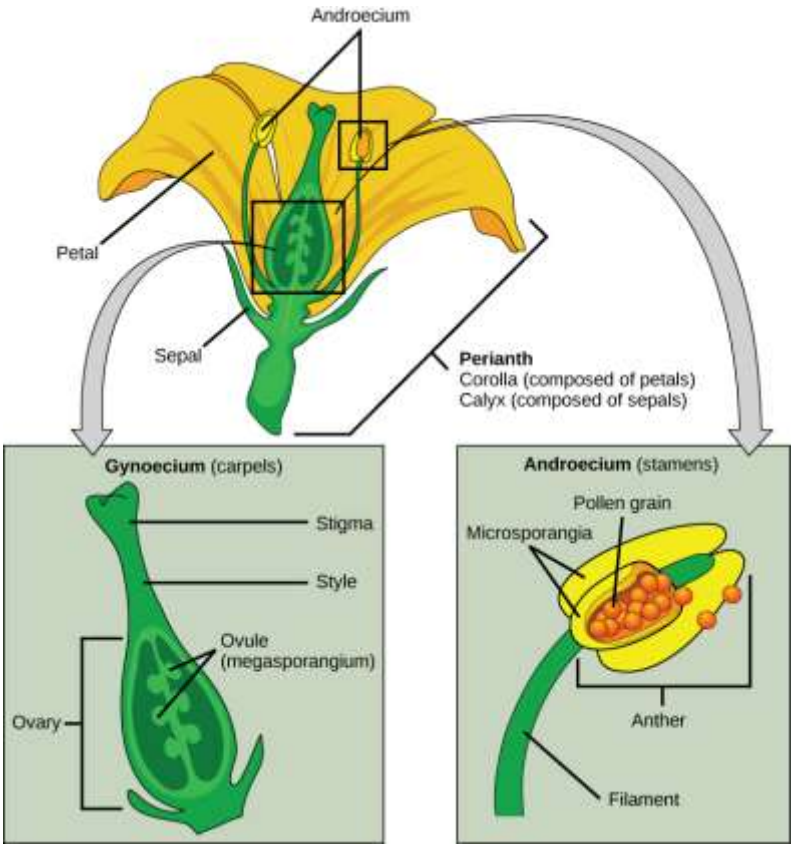
### d) Spore formation:

- Spores are very light asexual reproduce five bodies.
- A hard protective coat protects spores from high temperature and low humidity.
- Spore germinates and eventually develops into a new individual.
- Moss and ferns are the examples which shows reproduction through spores.

### ➢ Sexual reproduction

- Flowers are the reproductive part of plants.
- Stamen consists of anther and filament is the male reproductive part of the flower and the female reproductive part is pistil which consists of stigma, style and ovary
- Anther contains pollen grains which produce male gametes and ovary contains one or more ovule which produce female gametes or egg.
- A flower that has either of the reproductive part is known as unisexual flower. For example: flowers of cucumber and papaya are unisexual

- A flower that has both of the male and female reproductive part is known as bisexual flower. For example: flowers of mustard and rose are bisexual.
- In sexual reproduction, fusion of a male and a female gamete takes place to form a zygote.




## a) Pollination

- Pollination is the process in which pollen grains of a flower are transferred to the stigma with the help of pollinators.
- Pollinators are the medium which carry pollen grains to the stigma. Lady bug, bees, flies are the example of pollinators.

- There are two types of pollination
    i. **Self-pollination**
    ii. **Cross pollination**
- Self-pollination is the process where the pollen grains are transferred to the stigma of the same flower.
- Transfer of the pollen grains of a flower to the stigma of another flower of same species with the help of a pollinator is known as cross pollination.
- In unisexual flowers there is always cross pollination.

### b) Fertilisation

- zygote is the cell formed due to the fusion of male and female gametes.
- The zygote develops into an embryo.

## Fruits and seed formation

- The ovary grows into the fruit and other parts of the flower falls off.
- The seeds develop from the ovules.
- Seed encloses an embryo which is covered by a protective seed coat.
- Some fruits are juicy like mango and orange while some fruits are hard like almonds and walnuts.

## Seed dispersal

- same plants grow at different places because the seeds get dispersed in different places.
- Wind, animals, water are the means of dispersal of seed.

- Roots need space under the soil for their growth that is why dispersal of seeds at different places are important.