

# Chapter 12: Reproduction in Plants

## Multiple Choice Questions

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1. (b)      2. (b)

## Multiple Choice Questions

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1. (b)      2. (c)

## EXERCISE

### A. Tick (✓) the correct options.

1. (b)      2. (d)      3. (d)      4. (a)      5. (c)      6. (b)

### B. Match the following.

1. (e)      2. (a)      3. (d)      4. (c)      5. (b)

### C. Fill in the blanks.

1. asexual      2. sporangiophore      3. seed      4. tuber  
5. anther      6. wind

### D. Very Short Answer Questions.

1. Stamen      2. Pistil      3. Wind, water, animals

4. Balsam, castor                      5. *Spirogyra*, yeast
6. Self pollination and cross pollination

**E. Short Answer Type-I Questions.**

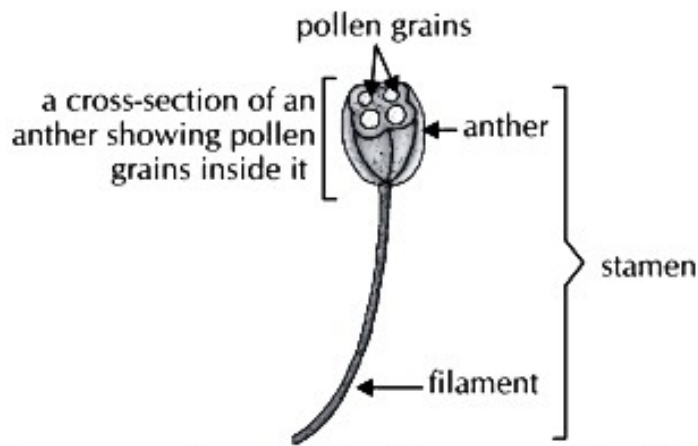
1. The transfer of pollen grains from the anther to the stigma of a flower is called pollination.
2. (a) By insects : bees, butterflies  
(b) By wind : corn, sugar cane  
(c) By water : *Hydrilla*, *Vallisneria*
3. The process in which a seed begins to grow into a baby plant when favourable conditions are available is called germination of seeds.
4. The fusion of male gamete with the female gamete to produce zygote is called fertilisation.
5. Wind-pollinated flowers have long and sticky feathery stigma to easily trap the pollen grains.
6. The breaking up of the body of a plant into two or more fragments, where each fragment grows and matures to form a new plant is called fragmentation.
7. The flowers, which contain only one organ for reproduction, either only the pistil or only the stamens, are called incomplete flowers.
8. Vegetative propagation is a type of asexual reproduction in which new plants are produced from vegetative parts of the plant like roots, stems and leaves.

**F. Short Answer Type-II Questions.**

1. Seed dispersal provides following benefits to the plants:
  - (a) It prevents overcrowding of plants in an area.
  - (b) It prevents the competition for water, minerals and sunlight among the same kind of plants.
  - (c) It helps the plants to grow in new areas.
2. (a) The greenish-black patches found on the bread are called bread mould. They reproduce through spores.  
(b) Hygiene and kindness
3. After fertilisation, following changes occur in a flower:
  - (a) The ovary of the flower swells and develops to form the fruit.
  - (b) The ovules present in an ovary grow to become seeds. Seed contains embryo and one or two cotyledons which store food.

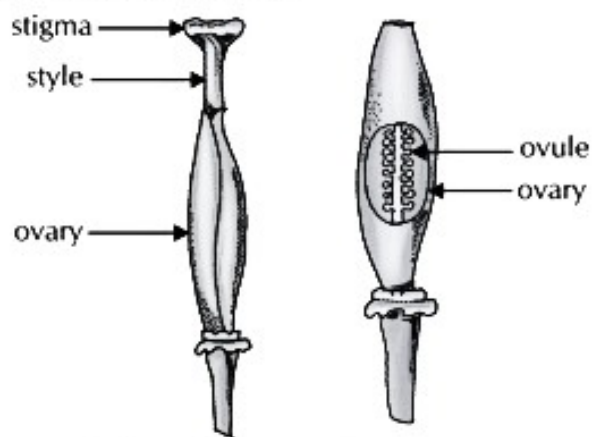
**G. Long Answer Questions.**

1. The reproductive organs of a flower are: (a) stamen and (b) pistil.
  - (a) Stamen: Stamen is the male reproductive organ of the plant. It has two parts, an anther and a filament. The swollen top of stamen is called anther and the stalk of stamen is called filament. Anther contains the pollen grains. Pollen grains contain the male gametes.



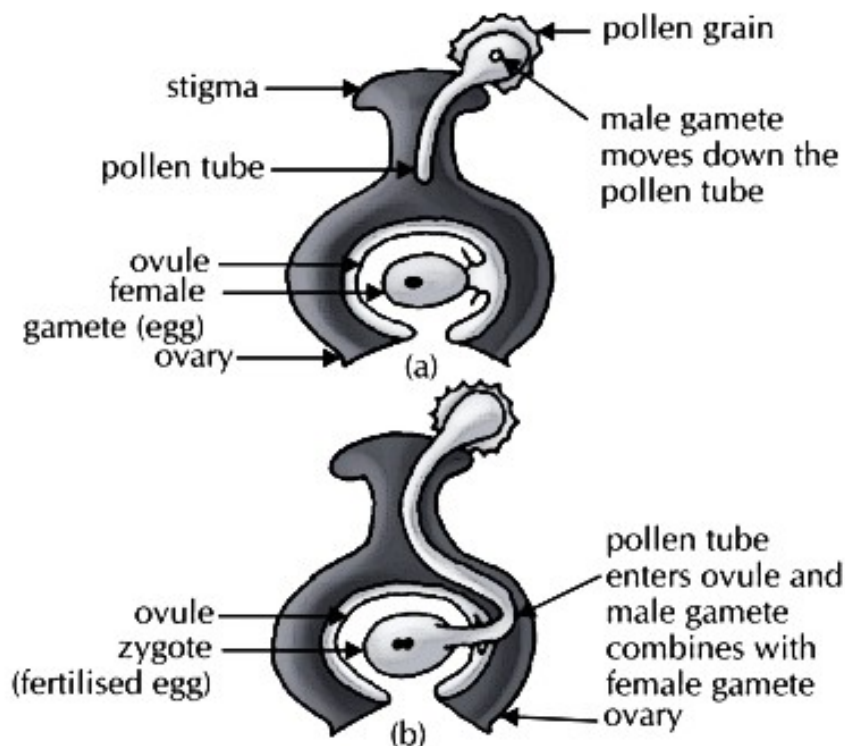
**Stamen : male reproductive organ of a plant**

(b) Pistil: Pistil is the female reproductive organ of the plant. It is made of three parts: stigma, style and ovary. The top sticky part of a pistil is called stigma. The middle part of the pistil is called style. It is a tube which connects stigma to the ovary. The swollen part at the bottom of a pistil is called ovary. The ovary contains ovules. Ovules produce female gametes. Each ovule contains only one female gamete, called egg.



**Pistil : female reproductive organ of a plant**

2. When a pollen grain falls on the stigma of a flower, it grows as a thin pollen tube which moves downwards.



**Fertilisation in a flower**

This pollen tube penetrates the stigma, passes through the style and enters into the ovule. The male gamete moves down to the ovule through

the pollen tube. The tip of the pollen tube bursts open and male gamete comes out of the pollen tube. The male gamete fuses with the female gamete present in the ovule to form a fertilised egg called zygote.

3. Differences between sexual and asexual reproduction

S.No.	Parameters	Sexual reproduction	Asexual reproduction
1.	Involvement of parent	Both parents, the male and female are involved.	Only one parent is involved.
2.	Involvement of gametes	Gametes are involved.	No gametes are involved.
3.	Production of seeds	Plants are obtained from existing parents through seeds.	Plants are obtained without the production of seeds.
4.	Similarity to the parent plant	Newborn plants are not identical to the parent plant.	Newborn plants are exactly identical to the parent plant.

11. NOTE (with ... Skill) ...



Ans -4 (long) vegetative propagation

## B. Artificial Methods of Vegetative Propagation

As vegetative propagation is a simple, faster and less expensive method of reproduction. It is used in various horticultural gardens and nurseries. Some artificial methods of vegetative propagation adopted by humans are—cutting, layering, grafting and tissue culture.

### (a) Cutting

In this method, stem with a bud is cut and planted

in the moist soil. After a few days, roots and leaves develop from the cut stem (Fig. 12.8). This method is used for growing rose, *Bougainvillea*, sugar cane, etc.

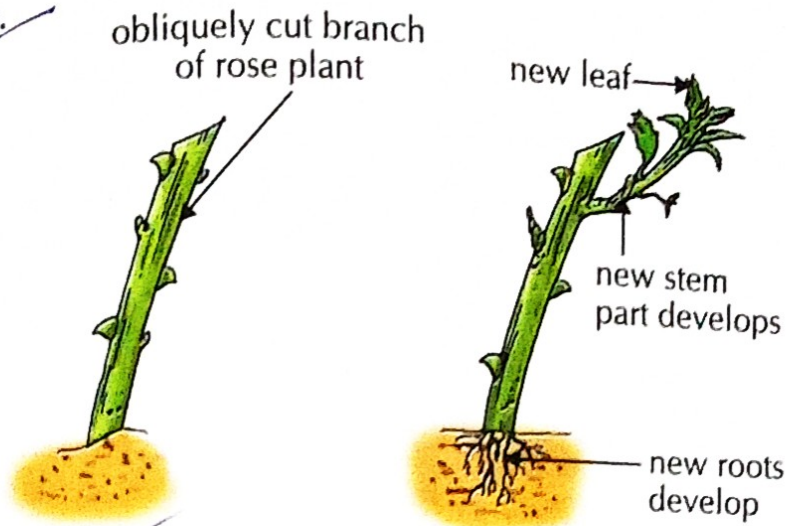


Fig. 12.8 Stem cutting of a rose plant produces a new plant.

### (b) Layering

In this method, a lower branch of the plant is bent and a small portion of it, is covered with moist soil (Fig. 12.9). The bark of covered portion is removed before covering with soil. After a few days, roots develop in the buried portion of the branch. The branch is then cut from the main plant and it grows as an independent plant. This method is used to propagate *Bougainvillea*, rose and jasmine.

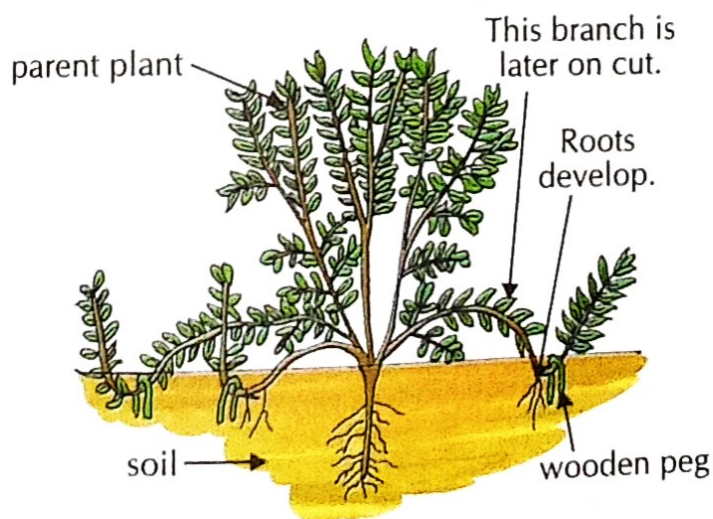
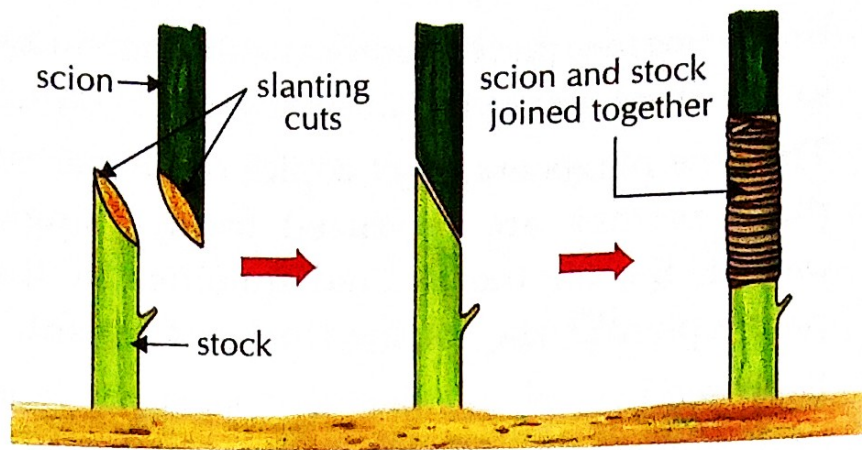


Fig. 12.9 Layering

### (c) Grafting

This method is used to develop new and better varieties by combination of two plants. The stem (**scion**) of one plant is stump to the other plant with the rooted stem (**stock**) (Fig. 12.10). The stem of stock and scion are cut obliquely and placed one above the other. These are bound tightly with a





✓ Fig. 12.10 Grafting

piece of cloth and covered with polythene sheet to avoid infection and loss of water from the cut surface. After a few days, new cells develop and join the scion and stock together. This method is used to get desired varieties of mango, rose, pear, lemon, etc. ✓

### (d) Tissue Culture

It is a technique of raising new plants from a tiny portion of the plant tissue called explant in a nutrient medium under aseptic (free from any infection) conditions. The cells of the tissue divide and grow into an unorganised mass of cells called callus. ✓

Certain hormones are added to the medium that induce plantlet formation (Fig. 12.11). Thousands of plantlets are formed from a small tissue. These plantlets are then transferred to the moist soil for further growth. *Orchids, Chrysanthemum, Asparagus* and many other plants are grown by this method.

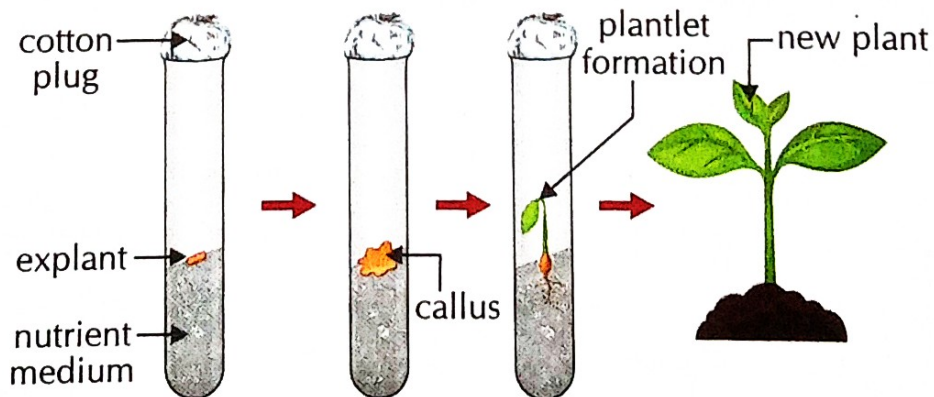


Fig. 12.11 Tissue culture

### Advantages of Vegetative Propagation in Plants

1. It is a quick method of multiplying a plant.
2. Vegetatively propagated plants require less



time to mature and bear more fruits, than those grown from the seeds.

3. The new plants are exact copies of the parent plant as they are produced from a single parent. So, all the desired qualities of the parent plant can be obtained in the new plant.
4. Even seedless plants, like banana, sugar cane and pineapple, are easily grown by this method.
5. Plants developed by vegetative propagation usually need less attention than plants grown from seeds.

### **Disadvantages of Vegetative Propagation in Plants**

1. Diseases present in parent plants spread to all the daughter plants.
2. Vegetative propagules cannot be stored like seeds.
3. Due to production of number of plants within a restricted region, vegetative propagation causes overcrowding.
4. The vegetatively propagated plants are unable to adapt in changing environment.