

Exercises

Ex. (A) Fill in the blanks.

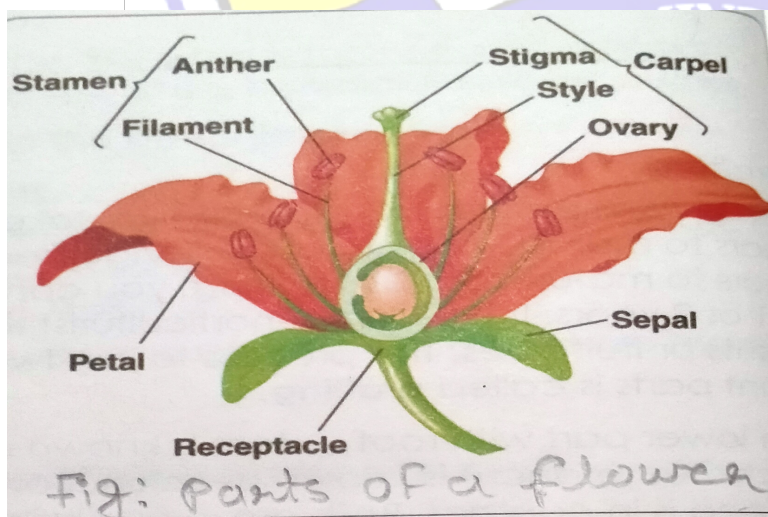
- 1) pollen tube
- 2) calyx and corolla
- 3) Receptacle
- 4) fruit and embryo
- 5) wind
- 6) leaf
- 7) asexually

(B) Define the following.

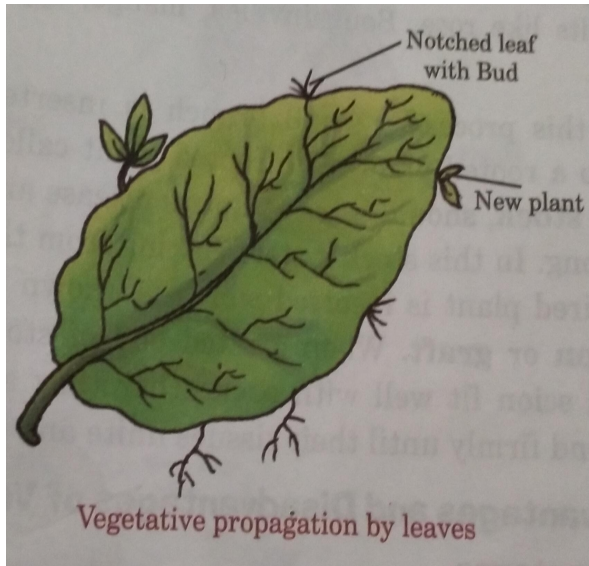
- 1) Bisexual flowers : If the male and female organs are present in the same flower the flower is to be bisexual flower.
- 2) fertilisation : The process in which male and female gametes fuse together, to form a single unit, is called fertilisation.
- 3) fragmentation : In multicellular organisms is a form of asexual reproduction in which an organism is split into fragments.

(C) Draw the following :

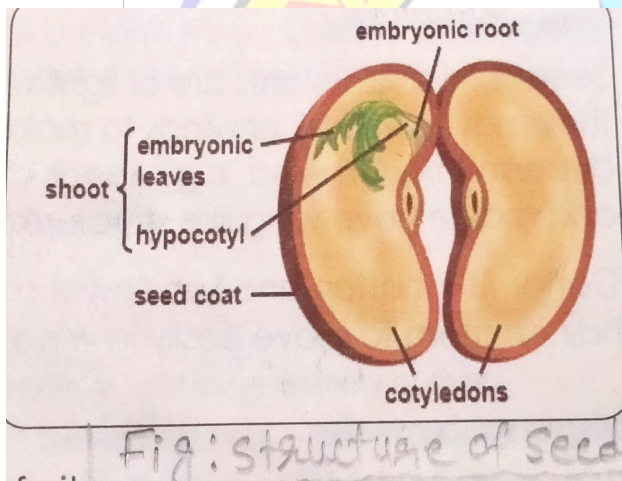
(1) Parts of a flower



(2) Bryophyllum leaf :



(3) Structure of a mixture seeds showing all the parts :



(4) Stages of germination :

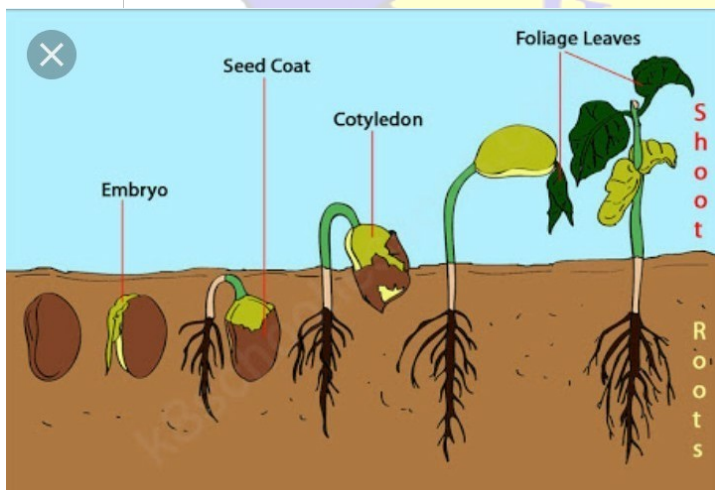


Fig. Different stages of germination

(D) Match the following : (Ans.)

- 1) Tuber
- 2) cutting
- 3) bulb
- 4) runner
- 5) leaf margins
- 6) rhizome
- 7) offset

(E) Who am I ? (Ans.)

- 1) Honey Bees
- 2) Radicle
- 3) Tuber
- 4) Zygote
- 5) Calyx

(F) Distinguish between :

1) In sexual reproduction, the male and female gametes fuse to form seeds that eventually develop into new plants.

In asexual reproduction, a new plant grows from any part of a plant other than the seeds.

2) In the male and female organs are present in the same flower the flower is said to be bisexual flower. Example : mustard and rose.

If only female or only male parts are present in the flower, the flower is said to be unisexual flower. Example : cucumber and maize.

3) Stamens are made up of a filament and anthers. The stamens together are called androecium. The female organs are stigma, style and ovary. These together are called gynoecium.

4) The transfer of pollen grains from the anther to the stigma of the same flower or to the stigma of another flower on the same plant is termed Self- pollination.

The transfer of pollen grains from the anther of one flower to the stigma of another flower on another plant of the same type is known as cross - pollination.

5) Radicle - gives rise to root system.

Plumule - gives rise to shoot system.

(G) Choose the correct option. (Ans.)

- 1) all of the above
- 2) Zygote
- 3) both (a) and (b)
- 4) fruit

5) all the above

(H) Write the answers in short for the following questions : (Ans.)

1) Two methods of vegetative propagation are : Grafting and layering

2) Androecium is the third whorl of most flowers. It is made up of male reproductive unit called stamens.

3) Pistil, the female reproductive part of a flower, which contains the stigma, style and the ovary.

4) The conditions for wind pollination is the seed should be light weight and have to fly by wind, so they can be pollinated.

5) (I) Seed dispersed by animals : Mango and guava

(ii) bulb : Onion

(iii) offset : Water hyacinth

(iv) rhizome : Ginger

6) Germination is the process by which the embryo present in seed grows and establishes itself as a seedling. The conditions required for the germination are proper amount of moisture, air, temperature and soil.

(I) Answer the following in detail : (Ans.)

1) It is known as micro propagation because in this method a very small piece from the plant of our choice is taken. This is called explants. The cells of the explants are separated by using some chemicals. These cells are cultured in a culture medium which is a nutrient medium. These cells are then replicated repeatedly to give a tissue which is an unorganised tissue and it is called callus. The callus is then transferred to another nutrient medium having two or three chemicals which transform the callus into a baby plant with root, stem and leaves.

(2) the advantage of vegetative propagation over sexual reproduction are :

(a) It takes less time for producing new plants.

(b) They produce genetically some type plants with similar features. So if you use a very healthy plant with extraordinary features.

(c) Large number is produced in a very short time.

(d) Some plants never produce seeds as in rose and banana since they are made to reproduce in this manner.

(e) It is cheaper and easier.

(3) Seeds can disperse by means of agents like wind, water and animals are :

(a) Dispersal by wind : Seeds of certain plants are of light weight and they may have hair or Wings to make them dispersed through wind. Examples : Seeds of drumstick and maple have wings like structure to fly.

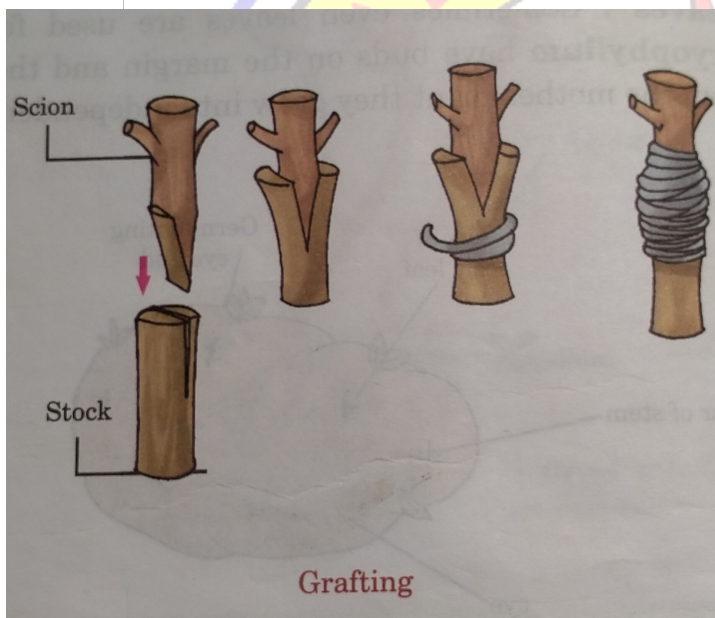
(b) Dispersal by water : The seeds of plants growing in and around the water bodies like rivers and seas disperse their seeds through water. Coconut, though it is big in size it can float on water due to the air trapped in its fibres. So they can easily be carried out through water.

(c) Dispersal through animals : Most of the fruits like mango, guava and orange are eaten by man and monkeys. After eating we throw the seeds in a different place far off from the mother plants. Some

seeds like Xanthium seeds have hooks which can be carried away through our clothes or stick to the skin of other animals to reach different places.

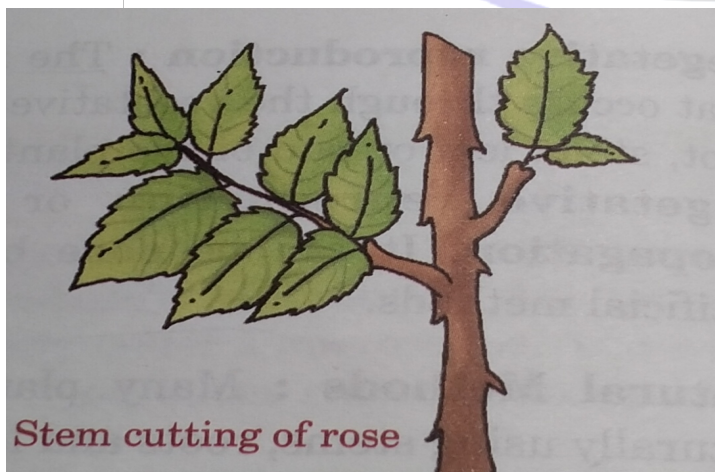
(4) The pollen grain after falling on stigma develops a pollen tube. The pollen travels through the pollen tube and reaches the ovule. The fusion of male and female gametes is known as fertilisation. Fertilisation results in a single unit called the zygote. Zygote undergoes rapid cell divisions and becomes embryo which later forms a seed. The ovary itself forms fruit. The fruit is formed after fertilisation takes place. Its seed, when germinated, produces a baby plant or seedling. Slowly baby plant grows into a mature plant.

(5) The process to join two different plants parts is called grafting. For example : Mango trees takes 15 years to mature. The lower part with root system is known as stock and the upper one is known as scion. Both should be cut obliquely so that the more surface is in contact. Both are joined and tied firmly and covered with cloth and wet the cloth at regular intervals. Finally the stock and scion will be joined together to be one plant. The stock supplies the water and minerals and the scion grows to give fruits. Other examples of plants grown by grafting a grow are rose, lemons and oranges.

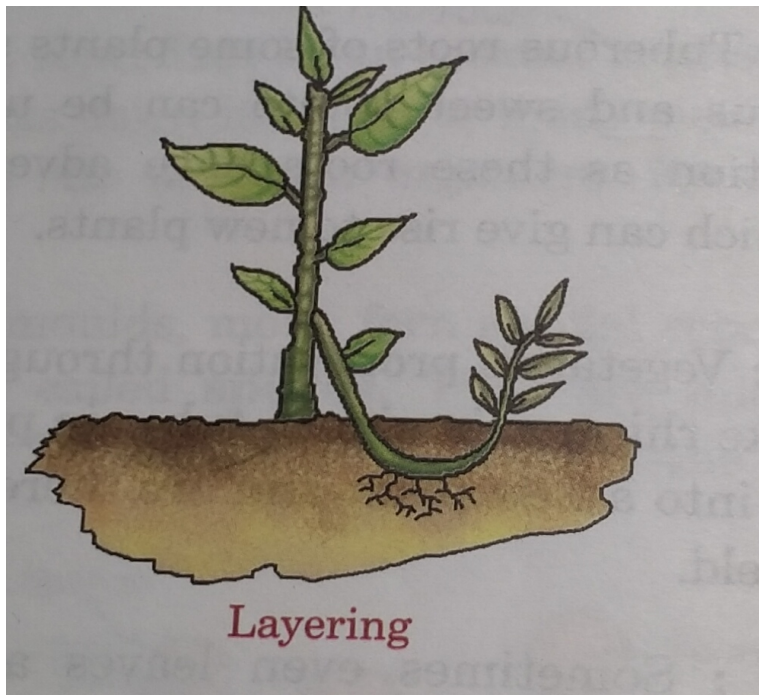


(6) Layering and cutting are artificial vegetative method of reproduction because :

(a) Cutting : in this method the stems of a healthy plant is selected and cut into pieces at least of 6 inches height and 1 cm diameter. These stem cutting are then planted and watered regularly. Examples : rose bougainvillea and sugar cane.



(b) Layering : In this process the old lower branches of a plant are bend towards the ground and covered with soil and a weight can be put over the soil. The covered part is watered regularly. After few weeks, roots develop from the covered portions. Example : Jasmine



(7) What are the functions of the following :

- (a) The calyx performs an important role for the flowering plant. As the flower is forming, it is closed tightly into a bud. It protects the developing flower and prevents it from drying out.
- (b) The main function of the Corolla is to assist in the reproductive process of the plant. The petals of the Corolla are designed to aid in pollination.
- (c) The point of stamen, which connects the anther and the filament is called connective. Its main function is the production of microspores, i. e. pollen grains.
- (d) The gynoecium is often referred to as the 'female' portion of the flower. It produces megaspores each of which develops into a female gametophyte which then produces egg cells.

HOTS : (Answers)

(1) Because producing plants by vegetative propagation is faster than growing plant from seeds therefore farmers prefer the method of vegetative reproduction for growing plants.

(2) No. The reason is that unisexual flower has only the main part (stamen) or the female part (pistil). Hence self - pollination can occur only in bisexual flowers.

(3) Asexual reproduction produces offspring that are genetically identical to the parent because the offsprings are all clones (an exact copy of a plant or animal) of the original parent.