

## Class 7<sup>th</sup> Living science solution 2017-18

### Chapter : 13. REPRODUCTION IN PLANTS

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#### P. 142 Oral Questions For Formative Assessment

1. No, in plants, it can be 2 parents for some and only one parent for some.
2. a. binary fission b. budding c. budding d. fragmentation e. vegetative reproduction
3. A seed is multicellular and contains the embryo and food for the young plant. A spore is usually unicellular and has no embryo and very little stored food.
4. vegetative reproduction, potato, strawberry
5. grafting, tissue culture

#### P. 146 Oral Questions For Formative Assessment

1. No, because complete flowers like rose contain both female and male reproductive organs. So in these plants, only one flower is required for reproduction.
2. Pollination means the process of transference of pollen grains from the anthers to the stigma. 3. This helps in making wind pollination easier in these flowers.
4. ovary, fruit
5. This is because the seeds need enough space, water, minerals and sunlight to develop into healthy plants. This will not happen if the seeds fall below the plant.

#### P. 146 For Formative and Summative Assessment

A. 1. b      2.d      3. a      4.b      5. b      6. d      7. c      8. c      9. a      10. d

B. 1. asexual reproduction      2. spore      3. fragmentation      4. false      5. artificial propagation

6. fertilization      7. zygote      8. true      9. a. cotton b. pea      10. false

C. 1. It is because of reproduction that life continues from generation to generation. Thus, it is important.

2. flower, leaf

3. Yeast reproduces by budding

4. Plants of lower order like mosses, ferns, moulds reproduce by spore formation.

5. Asexual reproduction requires only one parent and the offspring is genetically identical to the parent. In sexual reproduction, two parents, one male and one female are required. The offspring has a mix of inherited genes.

6. There are many forms of asexual reproduction in plants. They are:

(i) Fragmentation, for example; in spirogyra

(ii) Budding, for example, in yeast

(iii) Spore formation, for example, in mosses

7. When new plants are produced from the vegetative parts of the mother plant, such as root, stem, or leaves, without the help of any reproductive organs, it is known as vegetative reproduction.

8. The process of growing new plants by artificial methods is known as artificial propagation.

Four methods of artificial propagation are: (i) grafting (ii) cutting (iii) layering (iv) tissue-culture

9. The process of fertilization consists of the fusion of the male cell and the egg cell.

10. A seed starts germinating only under favourable conditions that is when it gets moisture, warmth and oxygen.

D. 1. Three different ways of vegetative reproduction are explained below.

(i) Potato is an underground stem tuber. When it is cut into parts and planted in the soil, each part with an 'eye' develops into a new potato plant. At each eye is a bud which can develop into a new plant.

(ii) In some plants, such as strawberry and grasses, the main plant develops side shoots which have buds that grow into new plants.

(iii) The leaf of Bryophyllum has many buds on its margin. These buds give rise to new plants.

2. Advantages of vegetative reproduction of plants are:

(i) It allows to produce new plants quickly.

(ii) The plants produced by this method are exact copies of the parent plant.

(iii) They usually need less attention than plants grown from seeds in the early stages of growth.

(iv) New varieties of plants having required characteristics can be developed by this method.

3. a. Cutting: In this method, a healthy young branch of a plant having leaf buds is cut off and planted in moist soil. The cutting develops roots and grows into a new plant, for example, rose, sugarcane.

b. Layering: In this method, a young branch is bent towards the ground and covered with moist soil. After some time roots developed from the covered part. This is called a layer. The branch can now be cut and made to grow into a new plant, for example, jasmine, rose.

c. Grafting: In this method, a twig or bud of one plant (called the scion) is kept over the cut stem of another plant (called the stock) tying them up together. The tissues of stock and scion join together to form one plant, for example, mango.

4. The process of transference of pollen grains from the anthers to the stigma is called pollination. After pollination, a thin tube called the pollen tube grows down from the pollen grain through the pistil. The pollen tube carries the male cell. It grows until it reaches the ovule and enters it. Fertilization takes place and the zygote is formed.

5. A plant produces a large number of seeds. If all these fall below the plant and start growing, they will not get enough space, water, minerals and sunlight. So they will not develop into healthy plants and many of them may even die. So dispersal of seeds is necessary by some natural agents by which the seeds of a plant get scattered over a large area. Agent of dispersal seed dispersed wind cotton water coconut animal xanthium explosion pea

6. After the formation of the zygote in fertilization, the petals, sepals and stamens wither away and fall off. Often the style and the stigma also fall off. Only the ovary remains. The ovules in the ovary contain a supply of food. The zygote takes in this food and begins to grow by cell division. In some time, it becomes an embryo. Meanwhile, the walls of the ovules develop hard layers and form seeds. As the seeds form, the ovary begins to swell and in time, it becomes a fruit.

7. In this method, a piece of tissue is cut off from the growing tip of a plant. The cells are separated and kept in a nutrient medium under controlled conditions. The nutrient medium contains hormones that make the cells divide and form groups of cells. Roots also develop. These are then kept in a different nutrient medium containing hormones that enable shoots to develop.

#### HOTS Questions

1. The statement is false because reproductive system is not needed for the organism to stay alive.
2. Insect-pollinated flowers are expected to be more attractive to attract insects for pollination. Wind-pollinated flowers do not need to attract insects.
3. If there is favourable wind, it can carry pollen grains from one insect-pollinated flower to the stigma of another and thus help in pollination.
4. The number of cells gets multiplied by 2 every hour. Therefore:
  - a. After 5 hours: No. of cells =  $2 \times 2 \times 2 \times 2 \times 2 = 32$
  - b. After 10 hours: No. of cells =  $2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 = 1024$
  - c. After 15 hours: No. of cells =  $2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 = 32768$  (From the above it can be seen that the general formula is: No. of cells =  $2^n$ , where n is the time in which the number of cells doubles.)