

Review question

Multiple choice questions :

1. Put a tick mark (✓) against the correct alternative in the following statements :

(a) Pollen is produced in the

- | | |
|---------------|-------------|
| (i) Filament- | (ii) style |
| (iii) Pistil | (iv) Anther |

Ans — (iv) Anther.

(b) Reproductive whorls of a flower are

- | | |
|------------------------|-----------------------|
| (i) Stamens & carpels | (ii) Sepals & petals |
| (iii) Sepals & stamens | (iv) Petals & carpels |

Ans — (i) Stamens & carpels.

(c) Grafting is a method of-

- | |
|---------------------------------------|
| (i) Artificial vegetative propagation |
| (ii) Sexual reproduction |
| (iii) Artificial pollination |
| (iv) cross-pollination |

Ans — (i) Artificial vegetative propagation

Short - answer questions :

1. Write two ways in which pollination may occur in plants

Ans - (a) Self pollination
(b) Cross pollination

2. Name the three agents of pollination

Ans - (a) Insect
(b) wind
(c) water

3. Give two features of flowers which favour pollination by insects

Ans - (a) These flowers are large with coloured petals to attract insects.

(b) These produce sticky pollen grains so that they may stick to the body parts of the insect.

4. Name two characteristics of flowers in which pollination occurs by wind.

Ans - (a) The pollen grains are light so that they are easily carried away.

(b) They generally have long anthers protruding out of the flower so that pollen grains may get blown off easily.

5. What is a 'false fruit'? Give one example.

Ans - The fruit where the base of the flowers i.e. thalamus becomes the main fleshy part of the fruit, while the ovary remains a small central part containing seeds is called false fruit.

Example - Apple.

6. Name any three agencies for dispersal of seeds.

Ans - i. Wind
ii. Water
iii. Man & animals

7. Fill in the blanks by suitable words:

(a) A flower that bears both the male & the female parts is known as _____ flowers.

Ans - bisexual

(b) A flower bearing only male or female parts is known as _____ flowers.

Ans - unisexual

(c) Transfer of pollen grains from the anther to the stigma is known as _____.

Ans - pollination

(d) Fusion of- male cell with the female cell is called _____.

Ans - Fertilization

(e) The ovule develops into a _____

Ans - seed.

(f) The ovary of- the flower develops into a _____

Ans - fruit.

Long answer questions

1. What - is vegetative reproduction ?

Ans - In some higher plants the vegetative parts of- the plant- like the root, stem or leaf- help in producing new plants, this is called vegetative reproduction.

2. Briefly explain why a gardener ~~prefers~~ prefers to grow certain plants vegetatively ?

Ans - Gardener prefers to grow certain plants by vegetative propagation method. The advantages in doing so are as follows -

i. Reproduction by vegetative parts takes place in a shorter time.

ii. It is a swift method of propagation.

iii. New plants, thus produced, spread very fast in a small area.

iv. All the good characters of the mother plant are retained by the daughter plants.

3. Why is it disadvantageous to grow plants vegetatively?

Ans - It is disadvantageous to grow plants vegetatively because of the following -

i. As all plants developed by vegetative reproduction method are generally identical, they are all likely to be affected simultaneously if a disease spreads in the farm.

ii. Dispersal of plants does not take place on its own. Daughter plants, so developed, tend to remain nearby & are restricted to a particular area leading to competition for resources.

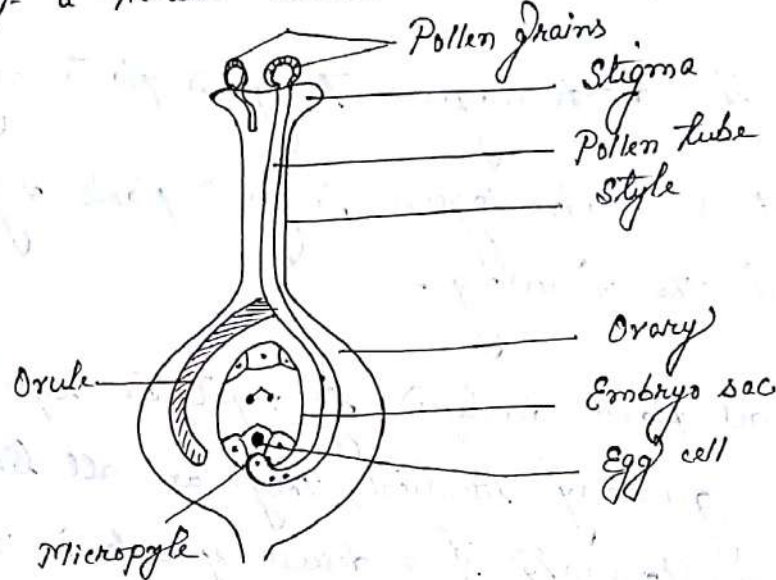
4. What is meant by pollination? Explain the structure of a germinating pollen grain with the help of a labelled diagram.

Ans - Pollination is the process in which the pollen grains from the anthers are transferred to the stigma of a flower of the same species.

Structure of a germinating pollen grain :-

(i) The mature pollen grain is a cell with a double wall — the outer exine & the inner intine.

(ii) Pollen grain germinates only if it falls on the stigma of a flower related to same species.



(iii) The pollen grain absorbs moisture from stigma surface & begins to grow a tube, called the pollen tube.

(iv) The pollen tube lengthens through the style & enters the ovule in ovary. There it releases its male gametes which fuse with the female gamete of the ovule to produce a zygote.

5. Imagine all the seeds produced by a plant happen to fall under the same plant & sprout into new plants. Mention any two problems that will be faced by the new plants.

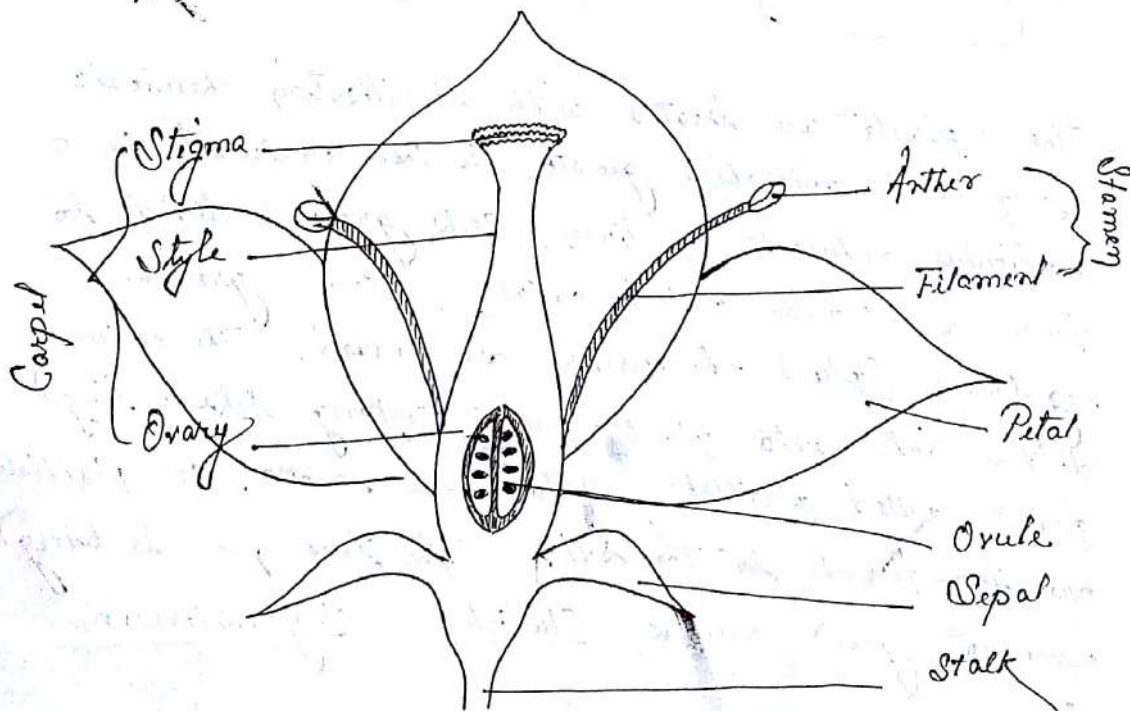
Ans — If all the seeds produced by a plant happen to fall under the same plant & sprout into new plants then in this situation plants will face the following problems —

i. A large number of plants will grow in a small limited space. The water & the minerals available to them in the soil will be limited.

ii. The air surrounding them will not be enough & less sunshine will be available to them. As a result, most of these sprouted plants will die...

Q. What is a flower? Draw a neat labelled diagram showing the L.S. of a typical flower.

Ans — A flower is a reproductive part of a plant. It helps in sexual reproduction.

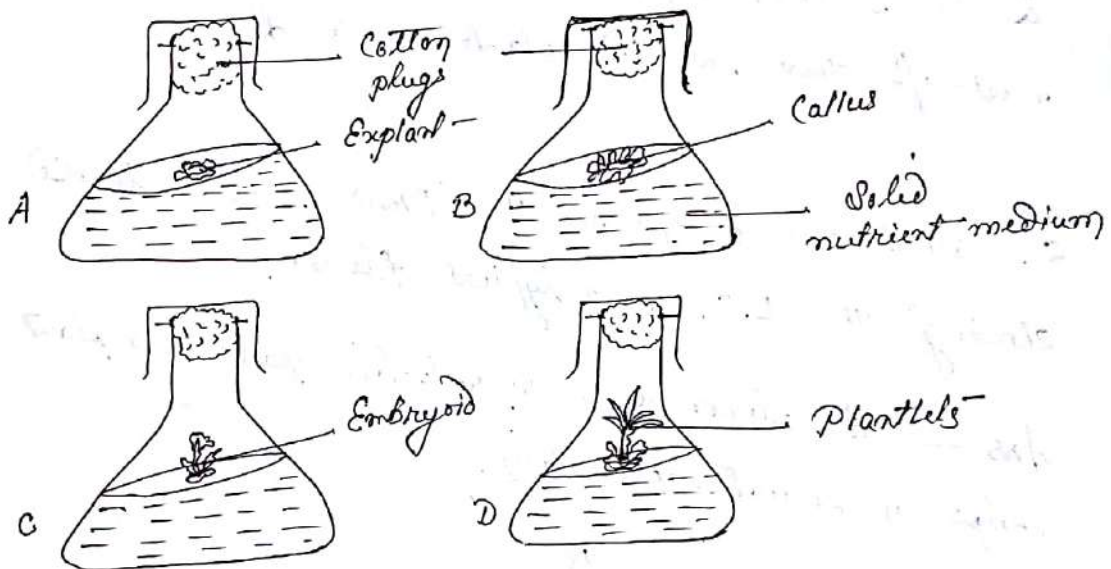


7. Write short notes on the following:

- (a) Micropropagation (b) Bryophyllum
(c) Vegetative reproduction (d) Grafting

Ans — (a) Micropropagation

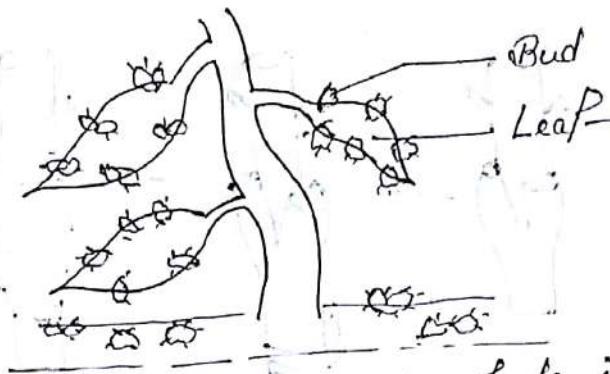
It is the propagation of plants by tissue culture technique. If vegetative propagation is not possible in a plant, then tissue of vegetative buds, shoot apex or any other suitable part of the plant can be used as an explant for micropropagation.



The explants are treated with sterilisation chemicals to prevent microbial growth, & then cultured in a particular nutrient medium. Cells grow & divide to form a cell mass called callus. Some growth regulators (plant hormones) are added. The callus differentiates into plant parts looking like a tiny plant, called plantlet. After 4-6 weeks, the plantlets are transferred to the soil. This technique is being used to grow orchids, Gладиолус, chrysanthemum etc.

(b) Bryophyllum

Leaves of some plants, such as Bryophyllum, produce buds in the notches in their margins. When such



leaves fall in moist-soil, their buds in the margins begin to grow as young tiny plants.

(c) Vegetative reproduction

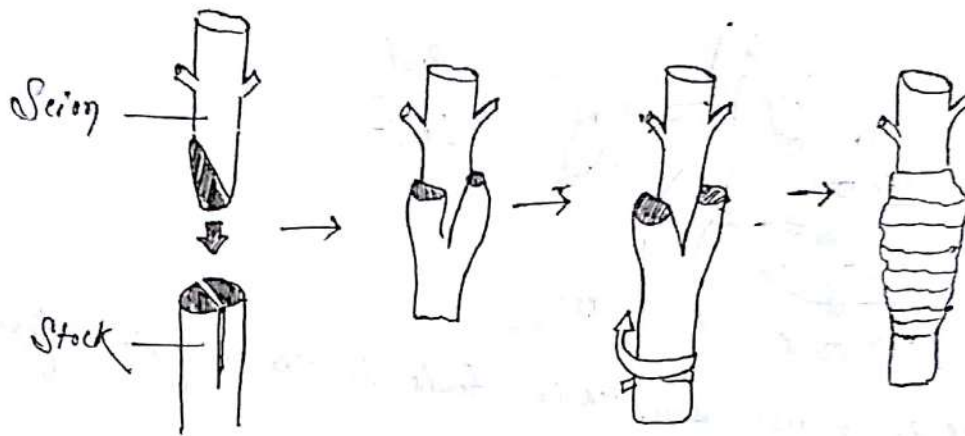
In some higher plants, the vegetative parts of the plant like the root, stem or leaf help in producing new plants. This is called vegetative reproduction. New plants are produced by the vegetative parts of a plant called propagules. Vegetative propagation is grouped into the following two types —

- (i) Natural vegetative propagation.
- (ii) Artificial vegetative propagation.

(d) Grafting

In some cases, such as rose, mango, guava etc., a small shoot or bud of a desired variety of plant is intimately fixed on the stem of another

Plant- of the same or related species. The plant-receiving the bud or the shoot- is called the stock and the shoot fixed on it- is called the scion.



For a successful graft, it is important- that the cambium layers of- the stock & the scion must- come into very close contact- so that- growth may continue. The grafted points are then bound together with tape & the joint- is covered with wax to prevent- dehydration & is protected from any bacterial infection. In a few days, the new cells develop and a new plant- grows.

Q. How is artificial pollination useful to plant breeders? Discuss briefly.

Ans — Artificial pollination means transfer of pollen to the stigma artificially. In ancient times, it was a common practice to sprinkle "male flowers" of palms on the "female flowers". However, in modern era, plant-breeders use artificial pollination for developing new varieties. The breeders remove the anthers in young flowers & cover such flowers by plastic bags. Such flowers are then pollinated with pollen from the plants of- the desired variety.

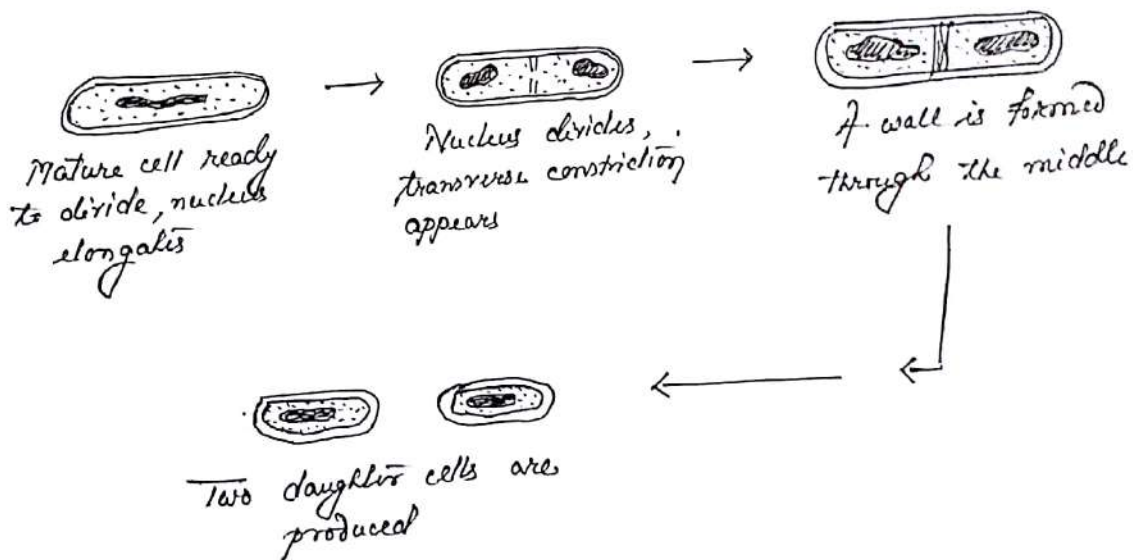
9. With the help of suitable diagrams, describe —

(a) Binary fission in plants

(b) Budding in yeast-cell.

Ans — (a) Binary fission in plants

Lower organisms like bacteria, reproduce asexually by the method of binary fission. 'Binary' means 'two' & 'fission' means splitting. In this method, the nucleus splits or divides into two & then the cell split across the middle, forming two

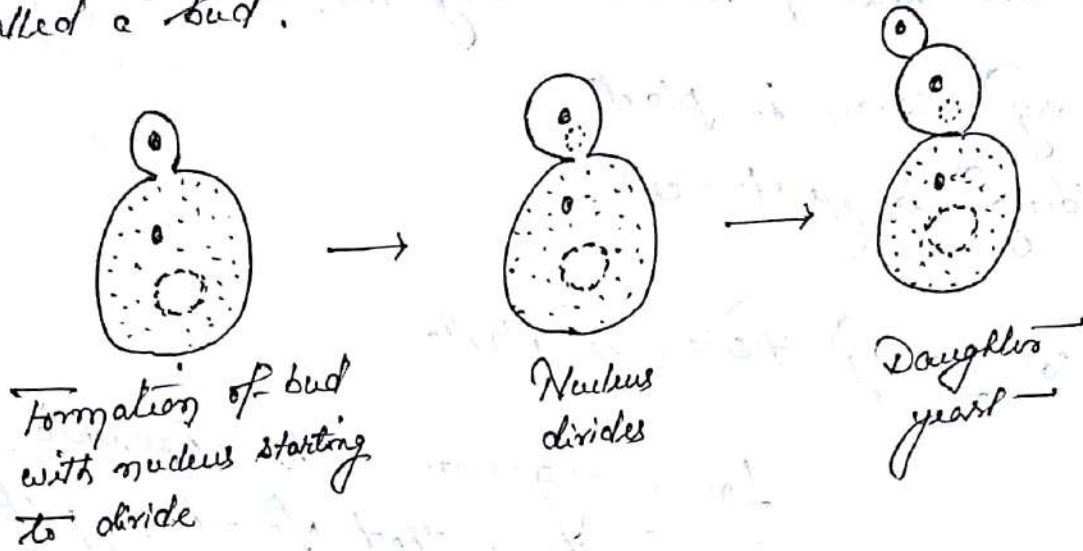


small identical cells called the daughter cells.

(b) Budding in yeast-cell

Budding method is common in yeast. Here, the parent-cell produces an outgrowth

called a bud.



The bud grows, & then gets detached (along with its daughter nuclei) from the parent body to lead an independent life.