Question:1

Write two examples for each of the following.

1. Plants that reproduce by fragmentation ....
2. Plants that reproduce by forming spores ....
3. Plants that reproduce by their roots ....
4. Plants that reproduce by layering ....

Solution:

1. *Spirogyra*, *Fucus*

2. Ferns, Mosses

3. Dahlia, Sweet potato

4. Grapes, Jasmine.

Question:2

Write one word for the following.

1. Microscopic single-celled or several-celled reproductive body .....
2. The cut stem with roots of another plant used in grafting .....
3. Transfer of pollen grains to the stigma of a flower .....
4. Male and female reproductive cells .....
5. The result of fusion of male and female gametes .....

Solution:

1. Spores
2. Stock
3. Pollination
4. Gametes
5. Zygote

Question:3

Which of these shows asexual reproduction?

(a) Yeast

(b) Hibiscus
(c) Apple
(d) All of these
Solution:
(a) Yeast.
Yeast reproduces by asexual reproduction.

Question:4
Which one of these does not reproduce by fragmentation?

(a) yeast
(b) Algae
(c) Spirogra
(d) fucus
Solution:
(a) Yeast.
Yeast does not reproduce by fragmentation.

Question:5
Which one of these reproduces by spores?

(a) Spirogyra
(b) Mosses
(c) Algae
(d) Potato
Solution:
(b) Mosses.
Mosses reproduce asexually by spore formation.

Question:6
Which one these reproduces by stem?

(a) Chrysanthemum
(b) Oxalis
(c) Potato
(d) All of these
Solution:
(d) All of these.
Plants such as *Oxalis*, *Chrysanthemum*, Potato, etc., reproduce by means of vegetative reproduction.

Question:7

What is the bud in the grafting method called?

(a) Stock
(b) Graft
(c) Scion
(d) None of these

Solution:

(c) Scion.
The bud is called as scion in the grafting method.

Question:8

How do plants reproduce?

Solution:

Reproduction is a process of forming new individuals from the parents. Flowering plants reproduce by sexual means whereas the non-flowering plants reproduce by either vegetative reproduction or asexual means.

Question:9

Differentiate between sexual and asexual reproduction.

Solution:

Sexual Reproduction.	Asexual Reproduction.
This is a process where the male and female reproductive cells called gametes combine together to form a single cell called zygote.	In this process, the reproduction takes place either by the division of a single body into two or more parts or by the formation of spores.
A male and a female parent are required for sexual reproduction.	Asexual reproduction happens by a single parent.

Question:10

What is fragmentation?

Solution:

Fragmentation is a type of asexual reproduction, where a single parent body breaks up into two or more fragments. These fragments, later on, grows to become a new plant. *Spirogyra* and *Fucus* are some of the examples of algae, which multiply through the process of fragmentation.

Question:11

What are the natural ways by which plants reproduce vegetatively?

Solution:

Vegetative reproduction is a type of asexual reproduction. This happens either naturally, or can be done artificially. In this method, the vegetative parts of a plant, such as, root, stem and leaves are used to produce new plants.

Question:12

Mention the common agents of pollination.

Solution:

The process of pollination is carried out by the agents like wind, water and insects.

Question:13

What is germination? What are the conditions needed for germination?

Solution:

Germination of seed is a process in which the embryo in the seed becomes active and begins to grow into a new plant. Favourable conditions of air, water and temperature are required for a seed to germinate into a plant, which otherwise remains inactive.

Question:14

Fill in the blanks with the correct words.

1. ..... (Scions/Gametes) refer to the male and female reproductive cells in a flower.
2. Anther and filament from the ..... (pistil/stamen) of a flower.
3. In ..... (sexual/asexual) reproduction, seeds are formed.
4. ..... (Wind/Water) pollinated flowers are small and not brightly coloured.
5. ..... (Vallisneria/Jasmine) is an insect-pollinated flower.

Solution:

1. Gametes refer to the male and female reproductive cells in a flower.
2. Anther and filaments form the stamen of a flower.
3. In sexual reproduction, seeds are formed.
4. Wind pollinated flowers are small and not brightly coloured.
5. Jasmine is an insect pollinated flower.

Question:15

Discuss advantages of vegetative reproduction.

Solution:

Vegetative reproduction has the following advantages.

(a) Non flowering plants can be reproduced through vegetative reproduction.

(b) In vegetative reproduction, the offspring resembles the parent plant in features and characteristics and conserves the quality of the parent plant.

(c) When compared to sexual reproduction in plants, this is a faster and more certain method of reproduction. In sexual reproduction, even after fertilization, the seed may not germinate due to unfavourable conditions, but in vegetative reproduction, a new plant is certainly produced as it grows from the part of the parent plant.

Question:16

Describe the different kinds of asexual reproduction with examples.

Solution:

Asexual reproductions in plants are of three types.

(a) Budding: In this process, a bud which is small, bulb like structure grows on the outer part of the cell, which after developed, gets detached from the parent cell forming an independent organism. Yeasts multiply by this method.

(b) Fragmentation: In this process, the parent body breaks up into two or more fragments, which later on, grows to become a new plant. *Spirogyra* and *Fucus* follow this type of reproduction.

(c) Spore formation: Some plants contain spores as reproductive bodies, which are surrounded by a thick wall. When there is a favourable condition for germination, these spores bursts out of thick wall, multiplies and grows into new plants. Ferns and mosses reproduce by this method.

Question:17

Explain the different ways with examples in which plants can be reproduced vegetatively by artificial means.

Solution:

Vegetative reproduction in plants can be carried out by artificial methods also. They are:

(a) Cutting: The vegetative parts of a plant, such as root, stem and leaves are cut off and placed in moist soil. These parts, later on develops roots and grows into a new plant. Sugarcane and *Hibiscus* are generally reproduced by this method.

(b) Grafting: In this method, the scion of one plant is placed on the stock of the other and is tied together. The stock which has roots, supplies water and minerals to the scion. After sometime, new cells starts developing at the region of joining, giving rise to a new type of plant. Example: Mango and rose plant.

(c) Layering: Layering is a method where a young branch from the plant is bent towards the ground and covered with moist soil. Once the branch develops roots, it is detached from the parent plant, allowing it to grow into a new plant. Grapes and jasmine reproduce by layering.

Question:18

What is pollination? What are the two types of pollination? Discuss the different agents of pollination with examples.

Solution:

Pollination is a process of reproduction in flowering plants, where the pollen grains are transferred from the anther to stigma. Pollination are of two types:

(a) Self-pollination

(b) Cross pollination

The agents of pollination are:

(a) Wind: Generally, the wind pollinating flowers are small, light coloured, nectar less and contain very light pollen grains which can be easily carried out by wind. Plants like wheat and rice are example for this kind.

(b) Water: The water currents carry the pollen grains to other flowers, released by the water pollinating plants. Sea grass and *Vallisneria* are the water pollinating plants.

(c) Insect: Insect pollinated flowers have bright coloured petals, rich in nectar and a sweet smell which attracts the insects. Orchids and jasmine plants are some examples for this kind.

Question:19

Explain the process of fertilization.

Solution:

After pollination, the pollen grains in the stigma start to grow, absorbing the nutrients from the stigma. A thin tube called pollen tube, starts growing out of the pollen grains till it reaches the ovary and enters the ovule. This tube carries the male gamete which is released into the ovule containing female gametes. There the male and female gametes unite together to form zygote. This process is called fertilization.

Question:20

List the different steps in the formation of seeds and fruits.

Solution:

After the process of fertilization, the ovary and the ovule develop and ripen. The ripened ovary of the plant is called fruit that can contain one or more seeds whereas the ripened ovule is called seed that contains an embryo and is surrounded by a protective layer. The ovary wall becomes the fruit wall. Other parts of the flowers like petals, sepals get dried up and fall off.

Question:21

What is dispersal? Explain with examples the different ways in which seeds get dispersed.

Solution:

Dispersal of seed is the separation of a seed from the parent plant so that the seed can grow into a new plant. Dispersal of seeds can take place by the following ways.

i. In some plants like castor and peas, there is an explosive mechanism where the fruit bursts open

to release the seeds.

ii. In plants like drumstick and maple, the seeds have radiating threads, which are easily carried away long distances by even a slow moving wind, releasing the seeds.

iii. Seeds like coconut have a spongy outer coat which helps them to get carried away by the water and germinate on the river banks and sea shores.

iv. Some fruits like mango and guava attract the birds and mammals, which helps in the dispersal of seeds.