

9th Biology Unit 10 Short - Corrected Version

Short Answer Questions (Exercise)

Q.1. Write a short note on budding in yeast.

Ans. This method is very common in yeast (a unicellular fungus). During budding a part of the parent organism grows out from its body. This part is called a bud.

When the bud has grown big, it may separate from parent body or may remain attached.

Examples

Some animals e.g. hydra also reproduce asexually by budding.

Q.2. Write a short note on spore formation in fungi.

Ans. Spores are thick-walled asexual reproductive cells. Most fungi (e.g. Rhizopus: bread mold) produce spores in special sac-like structures called sporangia (Singular: sporangium). When spores are mature, the sporangium bursts and spores are released.

Q.3. What are the advantages of spore formation in fungi and bacteria?

Ans. Spores can tolerate unfavorable conditions due to their thick walls. When favorable conditions are available the spores germinate to produce new fungus.

Example

Some bacteria reproduce by forming endospores (spores produced inside the cell). They form endospores in unfavorable environmental conditions. Even if the original cell dies, the endospore survives. When conditions improve, the endospore grows into a new bacterium.

Q.4. Describe how vegetative propagation occurs through runners.

Ans. A runner (stolon) is a horizontal stem that grows above the ground. A stolon has nodes where new leaves and roots grow. The leaves grow upwards and roots grow down. In this way, a new plant is formed at the node.

Example

Strawberry reproduces by using its stolon.

Q.5. State how potatoes reproduce through tubers.

Ans. Potatoes reproduce by tubers. It is fleshy stem that grows underground. It has "eyes" which are actually its buds. Eyes can grow into new plants.

Q.6. Describe the advantages and disadvantages of vegetative propagation.

Ans.

Advantages

- Vegetative propagation allows to produce many new plants in a short time.
- The new plants are exactly like the parent plant, so they all have same good characteristics.

Disadvantages

- Plants produced through vegetative propagation do not have genetic difference.
 - In other words all the offspring are identical. Due to it, they are equally sensitive to environmental changes and prone to the same diseases or pests.
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Q.7. Differentiate between the following:

i. Stolon and Rhizome

Stolon

It is a horizontal stem that grows above the ground.

A stolon has nodes where new leaves and roots grow.

Rhizome

It is a horizontal stem that grows below the ground.

It has nodes where new leaves and roots grow. In this way, a new plant grows from each node.

ii. Bulb and Corm

Bulb

It is a very short stem that grows underground.

It has bud and fleshy leaves.

Corm

It resembles the bulb but does not have fleshy leaves.

Almost all of a corm consists of stem, with a few brown nonfunctional leaves on the outside.

iii. Cutting and Grafting

Cutting

Cuttings are widely used to propagate house plants, ornamental trees and shrubs, and some fruit crops.

Roses and grapevines are grown from stem cuttings.

Grafting

Grafting is the joining of two or more plant parts of the same type to form a single plant.

In grafting, a bud or small stem of one plant is attached to the roots or stems of a second plant.

iv. Natural and Artificial Propagation

Natural Vegetative Propagation

It is a method of asexual reproduction in plants. In this method, new plant is produced from the vegetative part (root, stem or leaf) of the parent plant.

Vegetative propagation takes much less time to produce new generation as compared to the sexual method.

The offspring are genetically identical to the parent plant.

Artificial Propagation

Artificial propagation includes the methods in which humans produce new plants by using the vegetative parts of plants.

It includes techniques such as cutting, grafting, or tissue culture.

Artificial propagation is used to cultivate plants with desirable characteristics or to increase crop production.

v. Male and Female Gametophytes

Male Gametophytes

The pollen sacs present in anther act as microsporangia.

Female Gametophytes

The ovule acts as megasporangium. It contains diploid megaspore mother cell which undergoes meiosis, and produces four haploid megaspores.

Male Gametophytes

Each pollen sac contains many diploid microspore mother cells.

Female Gametophytes

Only one megaspore remains alive.

vi. Calyx and Corolla

Calyx

It is the outermost whorl.

It is made of green leaf-like sepals.

Sepals protect the inner parts of a developing flower before it opens.

Corolla

It is the second whorl.

It is made of petals.

Most flowers have coloured petals. Play role in pollination.

vii. Stamen and Carpel

Stamen

It is the third whorl and is made of male reproductive structures called stamens.

Each stamen consists of an anther and a filament. Anther contains pollen sacs (microsporangia), which produce microspores.

The stalk-like filament supports the anther.

Carpel

The enlarged base of carpel is called ovary. It is the part where ovules are produced.

Ovules produce megaspores during reproduction.

The stalk-like part attached to ovary is called style.

Q.8. Label the given diagram of flower:

(Note: Diagram not available in the text)

Q.9. Differentiate between spore and endospore.

Spore

In most of fungi like Rhizopus, when they reach at reproduction age, then body cells form thick walled sacs called sporangia. Inside each sporangia, a cell divides many times and forms many daughter cells called spores.

Endospore

Under unfavorable conditions, some species of bacteria reproduce by forming spores e.g. Clostridium and Bacillus. Thick walled spores are formed inside bacterial cell. These are endospores.

Sexual Reproduction in Plants

Q.10. Double fertilization is a unique event in the life cycle of an angiosperm plant. Describe the process, also explain the fate of products of double fertilization.

Ans. After pollination, pollen grains germinate to develop a pollen tube containing a tube nucleus and two sperm nuclei. Inside the ovule, the megaspore undergoes three consecutive mitotic divisions to produce female gametophyte containing an egg (1N), fusion nuclei (2N) and other associated cells.

Pollen tube enters the ovule and transfers both the sperms for fusion with two different cells of female gametophyte so called "double fertilization".

The products of double fertilization are:

1. The zygote (2N) develops into the embryo.
 2. The triploid nucleus (3N) develops into endosperm tissue which provides nourishment to the embryo.
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Q.11. Differentiate between self-pollination and cross-pollination.

Self-Pollination

If the pollination occurs within the same flower or between two flowers of the same plant, it is called self-pollination.

It does not ensure genetic variability.

Conifers, Grasses, Cereals, etc.

Cross Pollination

If pollination occurs between two different flowers of different plants, of the same species, it is called cross pollination.

It ensures more genetic variability in coming generations.

Rose, Sunflower, Buttercup etc.

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