



7. What is vegetative propagation? Give two suitable examples.

Ans: Vegetative propagation in plants is a method of asexual reproduction in which the parts other than seeds are used as propagules. In fact, it is a method of propagation in those plants which have lost their capacity to produce seeds or produce non-viable seeds (e.g., Banana, seedless Grapes, Rose, Pineapple, etc.) Among flowering plants, every part of the body, such as root, stem, leaf or bud takes part in vegetative propagation. Modified tuberous roots can be propagated vegetatively when planted in soil (e.g., sweet potato).

Underground modified stems such as rhizomes (e.g., Ginger, Eichhornia or water hyacinth, etc.), corms (e.g., Colocasia, Banana, etc.), bulbs (e.g., Garlic, onion, etc.), etc.

8. Define:

- (a) Juvenile phase
- (b) Reproductive phase
- (c) Senescent phase.

Ans:

(a) Juvenile phase : All organisms have to reach a certain stage of growth and maturity in their life before they can reproduce sexually. That period of growth is called juvenile phase. However, this phase is known as vegetative phase in plants. This phase is of different durations in different organisms.

(b) Reproductive phase: The end of juvenile/ vegetative phase marks the beginning of reproductive phase. During this phase, the organisms produce offspring. In higher plants, this phase can be easily seen when they come to flower but in animals, the juvenile phase is followed by morphological and physiological changes prior to active reproductive behaviour. The reproductive phase is also of variable period in different organisms like some plants, flower throughout the year while others show seasonal flowering. In animals like birds lay eggs seasonally "but when in captivity (as in poultry farms) can be made to lay eggs throughout the year. Placental female mammals, undergo cyclical changes in reproductive organs during this phase.

(c) Senescent phase: It begins from the end of the reproductive phase. During this phase of life span, there is progressive deterioration in the body (like slowing of metabolism, etc.). Old age ultimately leads to death.

9. Higher organisms have resorted to sexual reproduction in spite of its complexity. Why?

Ans: Higher organisms have resorted to sexual reproduction in spite of its complexity because sexual reproduction results in multiplication and perpetuation of species and also contributes to evolution of species by introducing variation much more faster than asexual reproduction in a particular population. Sexual reproduction enables higher organisms to survive during unfavourable conditions.

10. Explain why meiosis and gametogenesis are always interlinked?

Ans: In sexual reproducing organisms, meiosis occurs during gametogenesis to reduce the diploid number of chromosomes ($2n$) to haploid number of chromosomes (n) in the gametes. Thus, gametes are formed as a result of meiosis so that their

chromosome number.

11. Identify each part in a flowering plant and write whether it is haploid (n) or diploid (2n).

- (a) Ovary -----
- (b) Anther -----
- (c) Egg -----
- (d) Pollen -----
- (e) Male gamete -----
- (f) Zygote -----

Ans:

- (a) 2n
- (b) 2n
- (c) n
- (d) n
- (e) n
- (f) 2n

12. Define external fertilization. Mention its disadvantages.

Ans:

When fusion of the gametes takes place outside the body of the organisms, it is called external fertilization or external syngamy. The external medium like water is required for this form of fertilization. This form, is found in many aquatic animals like fishes, amphibians, majority of algae.

In this, parents release eggs and sperms in the surrounding water, then fertilization and development of offspring occur externally.

Disadvantages of external fertilization:

- (i) if occurs only in aquatic medium.
- (ii) A chance factor is involved requiring synchronous release of gametes nearby and absence of turbulence of water.
- (iii) There is no protection to young ones. They are vulnerable to a number of predators.

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