BIOLOGY

Important Questions

➢ Multiple Choice Questions:

1. A few statements describing certain features of reproduction are given below:

(i) Gametic fusion takes place
(ii) Transfer of genetic material takes place
(iii) Reduction division takes place
(iv) Progeny have some resemblance with parents

Select the options that are true for both asexual and sexual reproduction from the options given below:

(a) i and iii
(b) ii and iii
(c) ii and iv
(d) i and iii

2. The term 'clone' cannot be applied to offspring formed by sexual reproduction because:

(a) Offspring do not possess exact copies of parental DNA.
(b) DNA of only one parent is copied and passed on to the offspring.
(c) Offspring are formed at different times
(d) DNA of parent and DNA of offspring are completely different.

3. Amoeba and Yeast reproduce asexually by fission and budding respectively, because they are:

(a) Microscopic organisms
(b) Heterotrophic organisms
(c) Unicellular organisms
(d) Uninucleate organisms.

4. A few statements with regard to sexual reproduction are given below:

(i) Sexual reproduction does not always require two individuals.
(ii) Sexual reproduction generally involves gametic fusion.
(iii) Meiosis never occurs during sexual reproduction
(iv) External fertilisation is a rule during sexual reproduction.

Choose the correct statements from the options below:

(a) i and iv
(b) i and ii
(c) ii and iii
(d) i and iv

5. A multicellular, filamentous alga exhibits a type of sexual life cycle in which the meiotic division occurs after the formation of zygote. The adult filament of this alga has

(a) Haploid vegetative cells and diploid gametangia
(b) Diploid vegetative cells and diploid gametangia
(c) Diploid vegetative cells and haploid gametangia
(d) Haploid vegetative cells and haploid gametangia.

6. The male gametes of rice plant have 12 chromosomes in their nucleus. The chromosome number in the female gamete, zygote and the cells of the seedling will be respectively

(a) 12, 24, 12
(b) 24, 12, 12
(c) 12, 24, 24
(d) 24, 12, 24

7. Given below are a few statements related to external fertilisation. Choose the correct statements.

(i) The male and female gametes are formed and released simultaneously.
(ii) Only a few gametes are released into the medium.
(iii) Water is the medium in a majority of organisms exhibiting external fertilisation.
(iv) Offspring formed as a result of external fertilisation have better chance of survival than those formed inside an organism.

(a) iii and iv
(b) i and iii
(c) ii and iv
(d) i and iv

8. The statements given below describe certain features that are observed in the pistil of flowers.

(i) Pistil may have many carpels
(ii) Each carpel may have more than one ovule
(iii) Each carpel has only one ovule
(iv) Pistil has only one carprel

Choose the statements that are true from the options below:

(a) i and ii
(b) i and iii
(c) ii and iv
(d) iii and iv

9. Which of the following situations correctly describe the similarity between an angiosperm egg and a human egg?

(i) Eggs of both are formed only once in a lifetime
(ii) Both the angiosperm egg and human egg are stationary
(iii) Both the angiosperm egg and human egg are motile.
(iv) Syngamy in both results in the formation of zygote

Choose the correct answer from the options given below:

(a) ii and iv
(b) iv only
(c) iii and iv
(d) i and iv

10. Appearance of vegetative propagules from the nodes of plants such as surgarcane and ginger is mainly because:

(a) Nodes are shorter than internodes
(b) Nodes have meristematic cells
(c) Nodes are located near the soil
(d) Nodes have non-photosynthetic cells

11. Which of the following statements supports the view that elaborate sexual reproductive process appeared much later in the organic evolution?

(i) Lower groups of organisms have simpler body design
(ii) Asexual reproduction is common in lower groups
(iii) Asexual reproduction is common in higher groups of organisms
(iv) There is high incidence of sexual reproduction in angiosperms and vertebrates.

Choose the correct answer from the options given below:

(a) i and ii
(b) i and iii
(c) ii and iv
(d) ii and iii

12. Offspring formed by sexual reproduction exhibit more variations than those formed by asexual reproduction because:

(a) Sexual reproduction is a lengthy process
(b) Gametes of parents have qualitatively different genetic composition
(c) Genetic material comes from parents of two different species
(d) Greater amount of DNA is involved in sexual reproduction.

13. Choose the correct statement from amongst the following:

(a) Dioecious (hermaphrodite) organisms are seen only in animals
(b) Dioecious organisms are seen only in plants

(c) Dioecious organisms are seen in both plants and animals

(d) Dioecious organisms are seen only in vertebrates.

14. There is no natural death in single celled organisms like Amoeba and bacteria because:

(a) They cannot reproduce sexually

(b) They reproduce by binary fission

(c) Parental body is distributed among the offspring

(d) They are microscopic.

15. There are various types of reproduction. The type of reproduction adopted by an organism depends on:

(a) The habitat and morphology of the organism

(b) Morphology of the organism

(c) Morphology and physiology of the organisms

(d) The organism's habitat, physiology and genetic makeup

➢ Very Short Question:

1. Offsprings produced by asexual reproduction are referred to as clones. Why?
2. Name the most invasive aquatic plant weed which is called as Terror of Bengal.
3. How does Zygote usually differ from Zoospore in terms of ploidy?
4. Mention the main difference between the offspring produced by asexual reproduction and progeny produced by sexual reproduction.
5. Which characteristic property of Bryophyllum is exploited by gardeners and farmers?
6. What represents the life span of an organism?
7. Which individuals can be termed as clones?
8. How do the following organisms reproduce: Paramoecium and Penicillium?
9. State the function of a vegetative propagule.
10. How will you grow a banana and a ginger plant?

➢ Short Questions:

1. Higher organism have resorted to sexual reproduction inspite of its complexity. Why?
2. Tapeworms posses both male and female reproductive organs. What is the name given to such organism? Give two more examples of such organisms.
3. Study the relationship between first two words and suggest a suitable word for fourth place.

   (a) Male flower: Stamens :: Female Flower : .....

   (b) Birds: oviparous :: Primates : .....

(c) Chlamydomonas : Zoospores :: Penicilium : .....

(d) Ginger: Rhizome :: Agave : .....

4. Bryophytes and Pteridophytes produce a large number of male gametes but relatively very few female gametes. Why?
5. Enlist the significance of reproduction.
6. Why do hilly areas of Kerela, Karnataka and Tamil Nadu transform into blue stretches that attracts many tourists?
7. Define 'oestrus' and 'menstrual' cycles.
8. What regulates the reproduction processes and the associated behavioural expressions in organisms?

➢ Long Questions:

1. Explain the process of budding in yeast.
2. Describe the importance of vegetative propagation.
3. Describe the post-fertilisation changes in a flower.

➢ Assertion & Reason Questions:

1. For two statements are given-one labelled Assertion and the other labelled Reason. Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below.

   a. Both assertion and reason are true, and reason is the correct explanation of assertion.
   b. Both assertion and reason are true, but reason is not the correct explanation of assertion.
   c. Assertion is true, but reason is false.
   d. Both assertion and reason are false.

   Assertion: Asexual reproduction involves formation of clones of an organism.

   Reason: Clones are morphologically and genetically similar individuals.

2. For two statements are given-one labelled Assertion and the other labelled Reason. Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below.

   a. Both assertion and reason are true, and reason is the correct explanation of assertion.
   b. Both assertion and reason are true, but reason is not the correct explanation of assertion.
   c. Assertion is true, but reason is false.
   d. Both assertion and reason are false.

   Assertion: Several seed bearing plants propagate vegetatively.

   Reason: Sweet potatoes undergo vegetative propagation by means of root tubers.

✓ Answer Key-

➢ Multiple Choice Answers:

1. (c) ii and iv
2. (a) Offspring do not possess exact copies of parental DNA.
3. (c) Unicellular organisms
4. (b) i and ii
5. (d) Haploid vegetative cells and haploid gametangia.
6. (c) 12, 24, 24
7. (b) i and iii
8. (a) i and ii
9. (b) iv only
10. (b) Nodes have meristematic cells
11. (c) ii and iv
12. (b) Gametes of parents have qualitatively different genetic composition
13. (c) Dioecious organisms are seen in both plants and animals
14. (c) Parental body is distributed among the offspring
15. (d) The organism's habitat, physiology and genetic makeup

➢ Very Short Answers:

1. Because offsprings produced by Asexual reproduction is morphologically and genetically identical to parent.
2. Water hyacinth (Eicchornia)
3. Zygote diploid, zoospore haploid.
4. Offspring produced by asexual reproduction are genetically similar while progeny produced by sexual reproduction exhibit genetic variation.
5. Adventitious bud arising from margin of the leaf.
6. The period from the birth to the natural death of an organism represents its life span.
7. The individuals who are morphologically and genetically identical are called clones.
8. a) Paramoecium reproduces by the process of binary fission.

   b) Penicillium reproduces with the help of asexual structures called conidia.
9. The vegetative propagules are the asexual vegetative structures of the plant that are capable of giving rise to a new plant.

10. The rhizomes of a banana and a ginger are used to propagate new plantlets.

➢ Short Answer:

1. Because of variations, gene pool, Vigour and Vitality and Parental care.
2. Hermaphrodite; Examples : Earthworm, Leech.
3. (a) Carpel (b) Viviparous

   (c) Conidia (d) Bulbil
4. Because male gemete need medium (water) to reach egg/female gamete.A large number of the male gametes fail to reach the female gamete.
5. Significance of reproduction includes:
   - Propagation of species.
   - Sustenance of life on this planet.
   - Variation introduced during reproduction plays a role in evolution of new species.
6. Strobilanthus kunthiana which flowers only once in every 12 years flowered in 2006 that resulted into transformation of the hilly tracks of Kerela, Karnataka and Tamil Nadu into blue stretches.
7. Non- Primates like cows, sheep etc. show certain cyclic changes during reproduction called oestrus cycle while Primates like apes, humans the cycle is referred to as menstrual cycle.
8. Interaction between hormones and certain environmental factors regulate the reproductive processes and the associated behavioural expressions of organisms.

➢ Long Answer:

1. Budding in yeast. It is a common type of vegetative reproduction. In a medium which is abundantly supplied with sugar, yeast cytoplasm forms a bud-like outgrowth. The growth soon enlarges and a part of the nucleus protrudes into the bud and breaks off. The bud then begins to grow and then separates from the mother cell. Often it will itself form a bud before it breaks away, and straight or branched chains are produced.

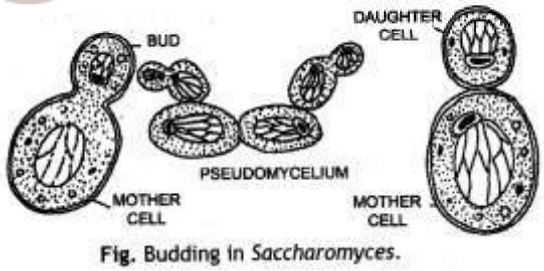


Fig. Budding in *Saccharomyces*.

Thus, as a result, branched or unbranched chains of cells called pseudo my cilium are produced. The cells are loosely held together. Sooner or later they become independent.

2. Merits of vegetative propagation:

i. Plants produced by vegetative propagation are genetically similar and constitute a uniform population called a clone.

ii. Plants with reduced power of sexual reproduction, long dormant period of seed, poor viability, etc. are multiplied by vegetative methods.

iii. Some fruit trees like banana and pineapple do not produce viable seeds. So these are propagated by only vegetative methods.

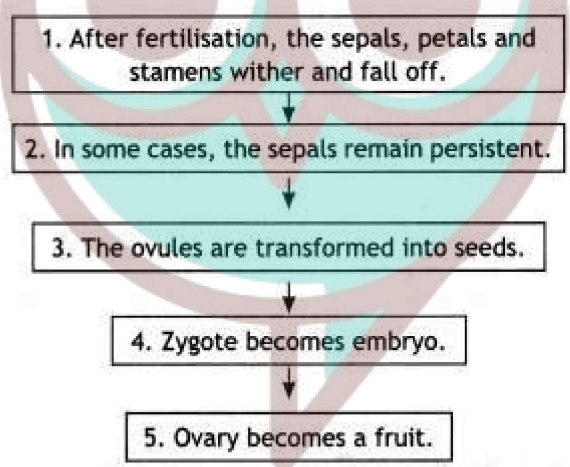
iv. It is a more rapid and easier method of propagation.

v. Good characters are preserved by vegetative propagation.

vi. Some plants such as doob grass (Cynodon dactylon) which produce only a small quantity of seed are mostly propagated by vegetative propagation.

vii. Grafting helps in getting an economically important plant having useful characteristics of two different individuals in a short time.

3. Post-fertilisation changes in a flower.



➢ Assertion and Reason Answers:

1) b) Both assertion and reason are true, but reason is not the correct explanation of assertion.

Explanation:
The reproduction is known as asexual reproduction, when an offspring is produced by a single parent without the involvement of gamete formation. As a result, the offspring that are produced are not only similar to one another but are also exact copies of their parent. Such a group of morphologically and genetically similar individuals are called clones.

2) b) Both assertion and reason are true, but reason is not the correct explanation of assertion.

Explanation:
Formation of new plants by means of vegetative units as tubers, buds, rhizomes is called vegetative propagation. It is useful for producing large number of offsprings within a short time and for preserving qualities such as disease resistance. In sweet potato, root tubers take part in vegetative propagation.