



BIOLOGY

BOOKS - PEARSON IIT JEE

FOUNDATION

**REPRODUCTION IN LOWER
ORGANISMS AND PLANTS**

Quick Recap

1. How are gametes different from the spores?



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2. Dicot and monocot seeds show some difference in the method of germination. Explain with suitable examples.



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3. Explain the various stages of sexual reproduction in angiosperms.



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4. Tissue culture in plants is easier than in animals. Give reason.



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Test Your Concepts Fill In The Blanks

1. _____ is a process by which new individuals of the same species are produced from the existing parental organisms.



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2. The organisms that are structurally less complex undergo _____ reproduction.



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3. Bacterium reproduces by the process of _____.



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4. Plasmodium reproduces by the process of _____ .



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5. _____ is the process of regrowth of an organism from its lost body part.



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6. Male gametes are formed in the _____ of the flower.



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7. _____ produces pollen grains in a flower.



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8. A stamen is constituted of _____ and _____.



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9. _____ are present in the ovary of a flower which produce female gametes.



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10. The thick outer layer of the pollen grains is known as _____ .



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11. The cell that acts as a male germ cell in the flower is _____ .



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12. The female reproductive structure in the flower is _____ .



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13. The pollination with the help of animals is known as _____.



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14. _____ provides nutrition for the egg in the embryo sac.



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15. After fertilization, _____ gets converted to seed.



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Test Your Concepts Select The Correct Alternatives

1. Prokaryotes are associated with which mode of reproduction?

A. Binary fission

B. Multiple fission

C. Regeneration

D. Fragmentation

Answer: A



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2. Identify the mode of reproduction that takes place in protozoans.

A. Binary fission

B. Multiple fission

C. Regeneration

D. Fragmentation

Answer: B



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3. Identify the most common mode of reproduction that takes place in Hydra.

A. Binary fission

B. Multiple fission

C. Regeneration

D. Budding

Answer: D



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4. Identify the organisms in which reproduction can take place by the method of regeneration.

A. Planaria

B. Sporangium

C. Algae

D. Amoeba

Answer: A



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5. Which among the following organisms can reproduce by the method of fragmentation?

(A) Algae

(B) Fungi

(C) Sporangium

A. Both A and C

B. Only B

C. Only C

D. Both A and B

Answer: D



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6. Match the entries of Column 1 with those of Column 2.

Column 1	Column 2
A. Rhizome	(i) <i>Colocasia</i>
B. Stem tuber	(ii) Yam
C. Root tuber	(iii) <i>Dahlia</i>
D. Corm	(iv) Ginger

A.

$A \rightarrow (iv), B \rightarrow (iii), C \rightarrow (ii), D \rightarrow (i)$

B.

$A \rightarrow (iv), B \rightarrow (ii), C \rightarrow (iii), D \rightarrow (i)$

C.

$$A \rightarrow (iv), B \rightarrow (iii), C \rightarrow (i), D \rightarrow (ii)$$

D.

$$A \rightarrow (iii), B \rightarrow (iv), C \rightarrow (ii), D \rightarrow (i)$$

Answer: A



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7. Which among the following is not a part of pistil?

(A) Ovary

(B) Ovules

(C) Style

(D) Stigma

A. Both A and B

B. Only C

C. Only B

D. All the given

Answer: C



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8. The transfer of pollen grains from the anther of a flower to the stigma of another flower with the help of wind is known as _____

.

A. Entamophily

B. Anemophily

C. Ornithophily

D. Melacophily

Answer: B



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9. Identify the plant that does not undergo self pollination under any conditions.

A. Papaya

B. Castor

C. Cucumber

D. Maize

Answer: A



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10. Identify the plants that germinate on the stigma of the flower of another plant of the same species.

A. Apple

B. Rye

C. Grapes

D. All the above

Answer: D



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11. Which among the following statements does not comply with cross-pollination?

A. Generation of small quantity of pollen grains is required for this pollination.

B. Seeds with better germinating capacity can be produced by this method.

C. Genetic diversity can be introduced to the plants.

D. Offspring can be healthier and disease resistant.

Answer: A



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12. Name the type of pollination in which the insects carry the pollen grains from the anther of a flower to the stigma of another flower of same species.

A. Ornithophily

B. Entomophily

C. Chiropterophily

D. Malacophily

Answer: B



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13. Which among the following does not come under biotic pollination?

A. Ornithophily

B. Entomophily

C. Anemophily

D. Malacophily

Answer: C



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14. Identify the biotic agents that are responsible for pollination in Saliva flower.

A. Bees

B. Birds

C. Snails

D. Bats

Answer: A



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15. Which of the following features are the characteristics of hydrophilous flowers?

(i) Brightly coloured petals

(ii) Pollen grains with long ribbon-like structures

(iii) Production of nectar

(iv) Production of large number of pollen grains

A. (i), (ii)

B. (ii), (iii)

C. (ii), (iv)

D. (i), (iv)

Answer: C



16. 100 pollen grains are produced from how many microspore mother cells?

A. 50

B. 25

C. 100

D. 75

Answer: B



17. Which of the following stages in the process of reproduction is associated with the reduction in the number of chromosomes?

A. Formation of pollen grains from microspores

B. Formation of megaspores from megaspore mother cells.

C. Formation of egg cell from megaspores

D. Formation of PEN

Answer: B



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18. Identify the stage of reproduction that involves three successive mitotic divisions.

A. Formation of pollen grains from microspores

B. Formation of megaspores from megaspore mother cells

C. Formation of embryo sac from
megaspore

D. Formation of PEN

Answer: C



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19. Which of the following is known as triple fusion?

A. Fusion of male gamete with female gamete to form zygote

B. Fusion of secondary nucleus with male gamete

C. Fusion of polar nuclei to form secondary nucleus

D. Fusion of generative nucleus with tube nucleus.

Answer: B



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20. In which of the following conditions, pollen grains are shed from the flower?

- A. Diploid uninucleate condition
- B. Haploid uninucleate condition
- C. Diploid binucleate condition
- D. Haploid binucleate condition

Answer: D



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21. Identify the wrongly matched pair with reference to the post fertilisation changes in a flowering plant.

A. Ovary-fruit

B. Ovule-seed

C. Ovary wall-seed coat

D. Sepals-shriveled

Answer: C



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22. Match the entries of Column 1 with those of Column 2.

Column 1	Column 2
A. Anemophily	(i) Snails
B. Chiropterophily	(ii) Birds
C. Ornithophily	(iii) Bats
D. Malacophily	(iv) Wind

A.

$A \rightarrow (iv), B \rightarrow (iii), C \rightarrow (ii), D \rightarrow (i)$

B.

$A \rightarrow (iv), B \rightarrow (ii), C \rightarrow (iii), D \rightarrow (i)$

C.

$$A \rightarrow (iv), B \rightarrow (iii), C \rightarrow (i), D \rightarrow (ii)$$

D.

$$A \rightarrow (iii), B \rightarrow (iv), C \rightarrow (ii), D \rightarrow (i)$$

Answer: A



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Mastering The Concepts Knowledge And Understanding

1. Define reproduction.



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2. Explain the process of reproduction that takes place in bacteria.



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3. Distinguish between sexual reproduction and asexual reproduction.



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4. Answer the following:

(a) Give an example of an organism undergoes this type of reproduction.

(b) Name the process of reproduction.

(c) Explain the above process.



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5. Explain the process of budding.





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6. Explain the process of reproduction in Plasmodium with the help of a diagram.



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7. Rohan liked the climbing rose present at his uncle's garden and wanted to plant it in his garden. Identify the method by which he can take a new plant of it to grow at his garden.



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8. Sirisha saw her mother was placing a piece of ginger in the soil after the use. Identify the reason behind this.



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9. Which method has to be employed to get a single plant with the desired characteristics of two or more plants and making it resistant to diseases? Explain the process.



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10. Differentiate regeneration from fragmentation.



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11. Identify the process by which the lost part of star fish can be regained in natural course.



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12. Draw the following diagrams and label their parts:

(a) Stamen

(b) Pistil



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13. Define the following:

(a) Pollination

(b) Fertilization



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14. Explain the formation of the male gamete.



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15. Name the different types of pollinations?



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16. What are the disadvantages of cross-pollination?



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17. Write a brief note on the agents for cross-pollination.



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18. Differentiate between biotic pollination from abiotic pollination.



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19. Mention the characteristics of entomophilous flower.



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20. Explain the following:

(a) Herkogamy

(b) Heterostyly



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21. What do you mean by dichogamy?



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22. Explain the formation of eggs in the flower.



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23. (a) Identify the pollination that generally takes place in bisexual flowers.

(b) Mention the specific characteristic features

of the flowers involved in this type of pollination.



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24. Why is cross-pollination not possible in all flowers?



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25. Name the flower in which the pollination is carried out by bees. Explain the mechanism of

collection of pollen grains in it.



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26. Name the flower in which lever mechanism takes place and explain the mechanism.



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27. Explain the mechanism of pollination in papilionaceous flower.



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28. Why self-pollination is not possible in *Gloriosa*?



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29. Why is the fertilization in angiosperms called double fertilization? What is meant by triple fusion?



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Mastering The Concepts Application And Analysis

1. Monocot plants cannot be propagated by means of grafting. Give reason.



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2. Usually, chrysanthemum plants are found to propagate naturally and found spreading in the entire area. Which method of propagation

does it depict? Can they be propagated by any other artificial methods?



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3. Why do banana plants not produce true seeds? How are they propagated?



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4. Tissue culture in plants is easier than in animals. Give reason.



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5. Plants can be propagated by means of vegetative propagation while asexual method of reproduction is not very common in animals. Justify.



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6. If a farmer wants to get an economically important plant having useful characters seen

in two different plants in a short time, suggest a method to follow for the development of such a new plant.



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7. Algae are capable of rapid multiplication in short duration. Why?



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8. What is meant by seed dormancy? What are the causes for it?



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9. Observe the figure given below and answer the following questions.



Which among the three seeds germinate?

Justify.



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10. Both spores and seeds go through the process of germination to produce new individuals. How do they differ from each other?



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11. Explain the alternation of generations seen in angiosperms.



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12. Explain the role of synergids and antipodal cells in the process of sexual reproduction in flowering plants.



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13. Identify the ploidy of the cells involved in fertilization in angiosperms.



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14. The process of sexual reproduction involves meiotic and mitotic cell divisions at various stages. With respect to the type of cell division associated with various stages, answer the following questions.

(a) Identify the stages of reproduction associated with meiotic cell division.

(b) How many pollen grains are formed from four microspore mother cells? How many nuclei do they possess?

(c) How are eight cells formed from one megaspore mother cell?



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15. An angiospermic plant has 32 chromosomes in its somatic cells. Find out the number of chromosomes in each of the following:

- (a) Megaspore mother cell
- (b) Egg cell
- (c) Pollen grain
- (d) Embryo of seed
- (e) Endosperm of seed

(f) Microspores

(g) Secondary nucleus



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16. Justify that parthenogenesis is different from parthenocarpy.



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Mastering The Concepts Assertions And Reasons

1. Assertion (A): Binary fission results in genetically identical progenies.

Reason (R): Cell division in prokaryotes does not exhibit DNA replication.

A. Both A and R are true and R is the correct explanation for A.

B. Both A and R are true, but R is not the correct explanation for A.

C. A is true and R is false.

D. A is false and R is true.

Answer: C



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2. Assertion (A): The cells in bacteria and parasitic protozoans remain in inactive stage for long periods.

Reason (R): The cells possess cell walls around them.

A. Both A and R are true and R is the correct explanation for A.

B. Both A and R are true, but R is not the correct explanation for A.

C. A is true and R is false.

D. A is false and R is true.

Answer: B



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3. Assertion (A): In custard apple, nature favour cross-pollination.

Reason (R): Custard apple is unisexual plant.

A. Both A and R are true and R is the correct explanation for A.

B. Both A and R are true, but R is not the correct explanation for A.

C. A is true and R is false.

D. A is false and R is true.

Answer: C



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4. Assertion (A): Herkogamy favour cross-pollination.

Reason (R): In sunflower, androecium matures earlier than gynoecium.

A. Both A and R are true and R is the correct explanation for A.

B. Both A and R are true, but R is not the correct explanation for A.

C. A is true and R is false.

D. A is false and R is true.

Answer: B



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5. Assertion (A): Pollen grains are diploid.

Reason (R): Male gametes are produced within the pollen grains.

A. Both A and R are true and R is the correct explanation for A.

B. Both A and R are true, but R is not the correct explanation for A.

C. A is true and R is false.

D. A is false and R is true.

Answer: D



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6. Assertion (A): Endosperm formed after fertilization is triploid.

Reason (R): Angiosperms are characterized by double fertilization.

A. Both A and R are true and R is the correct explanation for A.

B. Both A and R are true, but R is not the correct explanation for A.

C. A is true and R is false.

D. A is false and R is true.

Answer: A



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7. Assertion (A): In mustard seed, there is no endosperm.

Reason (R): Endosperm is the nutritive tissue for the developing embryo.

A. Both A and R are true and R is the correct explanation for A.

B. Both A and R are true, but R is not the correct explanation for A.

C. A is true and R is false.

D. A is false and R is true.

Answer: A



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8. Assertion (A): Flowering plants are heterosporous

Reason (R): Flowering plants produce haploid spores.

A. Both A and R are true and R is the correct explanation for A.

B. Both A and R are true, but R is not the correct explanation for A.

C. A is true and R is false.

D. A is false and R is true.

Answer: B



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Assessment Tests Fill In The Blanks

1. Flowering plants reproduce by the process

_____.



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2. _____ of onion can generate into a new plant.



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3. _____ is the male reproductive organ in the
flower.



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4. _____ is the female reproductive organ in the flower.



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5. _____ helps in the nourishment of the ovule.



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6. _____ produces female gametes in the flower.



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7. _____ pollination can take place in both unisexual and bisexual flowers.



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Assessment Tests Select The Correct Alternative

1. Which among organism reproduces by the process of regeneration?

A. Flatworm

B. Rhizopus

C. Plasmodium

D. Yeast

Answer: A



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2. Name the type of pollination in which the pollen grains are carried from the anther of a flower to the stigma of another plant of same species.

A. Anemophilous

B. Anemophily

C. Hydrophily

D. Ornithophily

Answer: C



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3. The union of male and female reproductive cells or gametes is known as?

- A. Fertilization
- B. Cross-pollination
- C. Self-pollination
- D. Biotic pollination

Answer: A



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4. Which among the following method does not belong to artificial vegetative propagation?

A. Cutting

B. Grafting

C. Layering

D. Growing

Answer: D



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5. Identify the true statement regarding grafting process.

A. The rooted plant that is cut in a slanting manner is known as scion.

B. The part of a stem that is cut in a slanting way is called stock.

C. This is a natural method of vegetative reproduction.

D. Grafting is practiced for mango and citrus plants.

Answer: D



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6. Name the process in which roots are grown from the part of the stem that is covered with the soil and a new plant is originated.

A. Grafting

B. Layering

C. Cutting

D. Both (a) and (b)

Answer: B



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Assessment Tests Correct The Following Statements

1. The process of uniting stock and scion to grow a single plant is known as layering.



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2. Budding is a sexual process of reproduction that takes place in hydra.



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3. Hydrophily pollination takes place in maize.



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4. On fertilization, the ovary gets converted into seed and ovule gets converted into fruit.



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Assessment Tests Missing Correlated Terms

1. Archaea : _____ : : Rhizopus : spore formation



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2. Sugarcane : cutting :: Forsythia : _____



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3. Rhizome : ginger :: _____ : potato



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4. Self-pollination : rice :: _____ : maize





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Assessment Tests Answer The Following Questions

1. Explain the type of pollination observed in *Commelina benghalensis*.



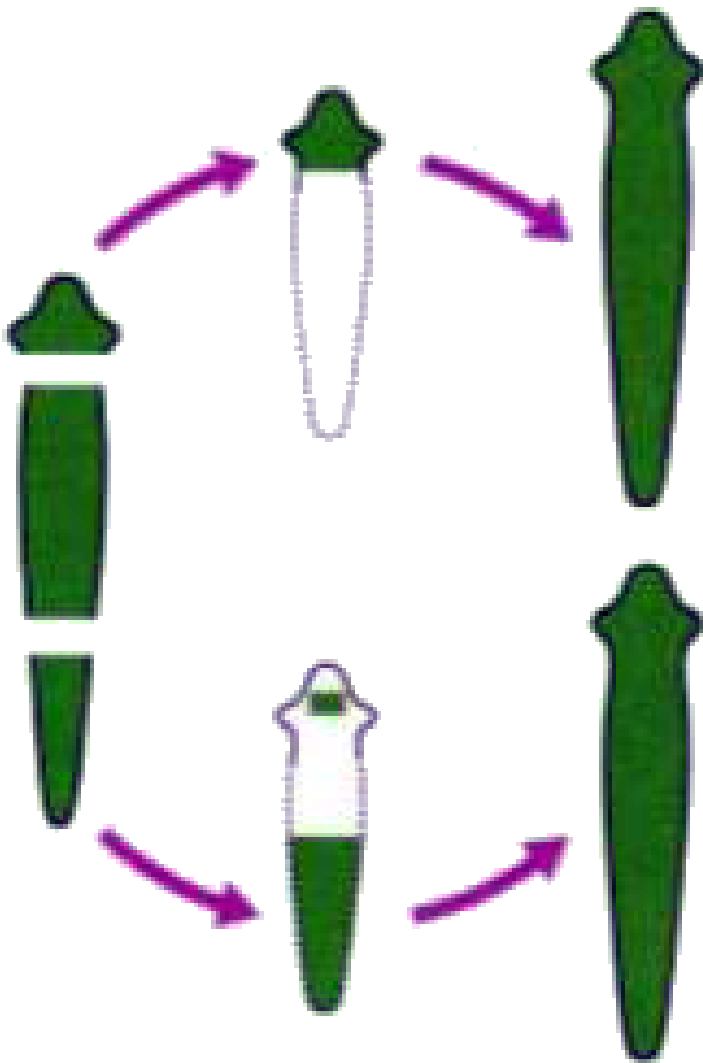
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2. Explain the process by which unicellular fungus like yeast reproduces.



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3. Observe the figure given below and answer the following questions.



(a) Identify the organism present in the above diagram.

(b) Name and explain the process it is undergoing.



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4. Name the different methods of artificial vegetative propagation.



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5. Explain the different types of dichogamy.



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6. Name the different components of seed.



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7. How does the embryo of the matured seed
can be divided?



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8. What are the characteristic features possessed by flowers in which the pollination is carried out by air?



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9. Identify the type of pollination that is carried out in Vallisneria?



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10. Differentiate anemophily from hydrophily.



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11. What are the main functions of the layer that is found below the hilum in seed.



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