

Multiple Choice Questions

1. A plant species X reproduces both vegetatively and through seeds. If a gardener wants to obtain identical offspring rapidly to preserve a high-yielding trait, which method should they prefer and why?

- A) Seed production, because it introduces genetic variation
- B) Vegetative propagation, because it yields genetically identical offspring rapidly
- C) Sexual reproduction, because it involves gamete fusion
- D) Spore formation, because it forms resistant outer walls

2. Which of the following correctly pairs an organism with its mode of asexual reproduction and the primary reason for its high rate of survival in adverse conditions?

- A) Amoeba — Multiple fission — Thicks-walled cyst protection
- B) Hydra — Fragmentation — Regeneration capabilities
- C) Rhizopus — Spore formation — Thick protective walls around spores
- D) Planaria — Budding — High rate of mitotic cell division

3. Regeneration in Planaria cannot be considered a true method of reproduction for all multicellular organisms. Why?

- A) It does not involve nuclear division
- B) Most multicellular organisms do not exist as simple collections of unspecialized cells
- C) It occurs only in unicellular organisms
- D) It involves gamete fusion prior to cell division

4. In a laboratory experiment, a student cultured yeast in two separate conical flasks:

Flask A: Warm sugar solution

Flask B: Plain warm water

After two hours, budding was observed only in Flask A. What does this demonstrate about asexual reproduction in yeast?

- A) Water inhibits cell division in yeast

B) Budding requires external metabolic energy derived from nutrition

C) Yeast undergoes binary fission in pure water

D) Budding is triggered only by chemical light signals

5. How does binary fission in *Leishmania* differ from binary fission in *Amoeba*?

A) *Leishmania* divides in any plane, while *Amoeba* divides along a definite orientation

B) *Leishmania* divides in a definite orientation relative to its whip-like structure, whereas *Amoeba* divides in any plane

C) *Leishmania* forms cysts, while *Amoeba* forms buds

D) *Leishmania* reproduces sexually, whereas *Amoeba* reproduces asexually

6. If a slice of bread is left in a dark, moist place, black powdery patches appear on it after a few days. These patches consist of:

A) Hyphae absorbing nutrients directly from air

B) Sporangia containing hundreds of reproductive spores

C) Pollen grains germinated from surrounding air

D) Encysted zygotes undergoing meiosis

7. Vegetative propagation by leaves is observed in *Bryophyllum*. Where do the adventitious buds develop on the leaf?

A) Midrib junction

B) Petiole base

C) Margins in the leaf notches

D) Apex of the leaf blade

8. Tissue culture technique is widely used for producing ornamental plants. Which statement accurately describes its major advantage over conventional methods?

A) It combines traits from two parent plants to create hybrids

B) It produces disease-free plants from a tiny parent tissue in sterile conditions

C) It relies on seed dormancy to ensure long shelf life

D) It eliminates the need for plant growth hormones

9. Identify the unisexual flower among the options below:

- A) Hibiscus
- B) Mustard
- C) Papaya
- D) Rose

10. What is the essential functional difference between the calyx/corolla and the androecium/gynoecium in a bisexual flower?

- A) Calyx and corolla produce gametes; androecium and gynoecium protect the bud
- B) Calyx and corolla are non-reproductive accessory whorls; androecium and gynoecium are essential reproductive whorls
- C) Calyx and corolla participate in double fertilization; androecium and gynoecium attract pollinators
- D) Both groups perform identical functions during seed development

11. During pollination, pollen grains land on the sticky surface of which floral part?

- A) Anther
- B) Style
- C) Stigma
- D) Ovary

12. Trace the correct path of a male gamete from the pollen grain to the female egg cell in a flowering plant:

- A) Stigma → Style → Ovary → Ovule → Female gamete
- B) Anther → Stigma → Ovary → Style → Female gamete
- C) Style → Stigma → Ovules → Ovary → Female gamete
- D) Stigma → Ovary → Style → Ovule → Female gamete

13. In angiosperms, “double fertilization” refers to:

- A) Fusion of two male gametes with one egg cell

B) Syngamy (fusion of one male gamete with egg cell) and Triple Fusion (fusion of second male gamete with polar nuclei)

C) Fertilization of two separate ovules at the same time

D) Fusion of pollen tube with both style and stigma tissues

14. What is the immediate product of syngamy in flowering plants, and what is its ploidy level?

A) Endosperm (Triploid)

B) Seed coat (Diploid)

C) Zygote (Diploid)

D) Embryo (Haploid)

15. What happens to the floral parts—petals, sepals, stamens, style, and stigma—after successful fertilization?

A) They swell up to form the seed coat

B) They transform directly into pericarp

C) They usually shrivel and fall off

D) They fuse together to form the endosperm

16. Which part of the seed serves as the future shoot and future root, respectively?

A) Cotyledon and Endosperm

B) Plumule and Radicle

C) Radicle and Plumule

D) Seed coat and Cotyledon

17. Why is cross-pollination generally considered advantageous over self-pollination?

A) It requires less energy from the plant

B) It ensures 100% seed germination speed

C) It promotes genetic diversity and adaptation in offspring

D) It eliminates the need for external pollinators like bees or wind

18. What role do cotyledons play during seed germination?

- A) Protecting the seed from mechanical injury
- B) Absorbing water directly from the soil to trigger mitosis
- C) Storing food nutrients for the developing embryo until photosynthesis begins
- D) Anchoring the seed firmly into the soil

19. A plant's flower has its stamens mature and shed pollen before its stigma becomes receptive. What is the primary biological outcome of this timing mechanism?

- A) Prevents seed production altogether
- B) Favors cross-pollination over self-pollination
- C) Forces the plant to reproduce via vegetative propagation
- D) Triggers triple fusion without syngamy

20. What is the primary function of the pollen tube during fertilization in flowering plants?

- A) To anchor the pollen grain onto the stigma surface
- B) To absorb moisture from the style for pollen growth
- C) To carry male gametes down through the style to the ovule inside the ovary
- D) To supply nutrients directly to the ripening ovary wall