How Do Organisms Reproduce

Basic Concepts of Reproduction (Questions 1-4)

1. What is reproduction? Why is reproduction essential for organisms? Explain the significance of reproduction in maintaining species continuity.
2. Differentiate between sexual and asexual reproduction. List three advantages and disadvantages of each type.
3. What is DNA copying? Why is it important during reproduction? What happens when DNA copying is not accurate?
4. Explain why offspring formed by asexual reproduction are genetically identical to parents, while those formed by sexual reproduction show variations.

Asexual Reproduction (Questions 5-9)

5. Define the following types of asexual reproduction with examples: binary fission, budding, fragmentation, and spore formation.
6. Describe the process of binary fission in Amoeba. How does it differ from multiple fission in Plasmodium?
7. What is vegetative propagation? Explain any three methods of natural vegetative propagation with examples.
8. How is vegetative propagation useful in agriculture? Name three plants that are commercially grown using vegetative propagation.
9. What is tissue culture? How has this technique revolutionized plant breeding and agriculture?

Sexual Reproduction in Plants (Questions 10-13)

10. Draw a labeled diagram of a flower and explain the functions of each part. Differentiate between unisexual and bisexual flowers.
11. What is pollination? Differentiate between self-pollination and cross-pollination. Which method is more beneficial and why?
12. Describe the process of fertilization in flowering plants. What is double fertilization?
13. What happens to various parts of a flower after fertilization? How do fruits and seeds develop?

Sexual Reproduction in Humans (Questions 14-18)

14. Describe the male reproductive system in humans. Write the functions of testes, epididymis, and accessory glands.

15. Explain the female reproductive system in humans. What are the functions of ovaries and fallopian tubes?
16. What is menstruation? Describe the menstrual cycle and explain the role of hormones in regulating it.
17. What happens during fertilization in humans? Where does it occur and what is formed as a result?
18. Explain the importance of placenta during pregnancy. What are its functions?

Reproductive Health (Questions 19-20)

19. What is meant by reproductive health? Why is it important to maintain reproductive health during adolescence?
20. Explain different methods of contraception. Why is family planning important for individual and national health?

Additional Application-Based Questions:

Higher Order Questions:

- Why do some plants reproduce both sexually and asexually? Give examples and explain the advantage.
- A farmer wants to preserve the exact characteristics of a high-yielding plant. Which method of reproduction should he choose and why?
- Explain why sexual reproduction is preferred in higher organisms despite being more complex than asexual reproduction.
- How does the process of reproduction ensure both continuity of species and variation among individuals?

Practical Application Questions:

- Why is it not advisable for very young or very old women to get pregnant? Explain the biological reasons.
- A gardener cuts a branch of a rose plant and plants it in soil. After some time, it grows into a new plant. Explain the scientific principle behind this observation.
- Why do some fruits develop without fertilization? Give examples of such fruits.
- Explain why twins can be identical or non-identical. What is the biological basis for each type?

Analytical Questions:

- Compare the energy expenditure in sexual vs asexual reproduction. Which process requires more energy and why?
- How do environmental factors affect the choice between sexual and asexual reproduction in some organisms?
- Explain the role of meiosis in sexual reproduction and why it is essential for maintaining chromosome number across generations.
- Why is genetic variation important for species survival? How does sexual reproduction contribute to this variation?