



Class 12 Biology | Biotechnology: Principles And Processes

MCQ WORKSHEET • 15 questions • Choose one correct option • Suggested time: 25 minutes

1. A restriction endonuclease recognises a specific

- A. DNA sequence
- B. Lipid composition
- C. Cell colour
- D. Amino-acid chain only

2. Many restriction sites are palindromic, meaning the sequence reads the same

- A. As a protein sequence
- B. 5' to 3' on both complementary strands
- C. 3' to 3' on one strand
- D. Without complementary pairing

3. Sticky ends facilitate recombinant DNA formation because they

- A. Destroy ligase
- B. Prevent all hydrogen bonding
- C. Base-pair with complementary ends
- D. Contain no nucleotides

4. The enzyme used to join DNA fragments covalently is

- A. DNA ligase
- B. Protease
- C. Amylase
- D. Lipase

5. The ori region of a vector is required for

- A. Gel staining
- B. Initiation of DNA replication
- C. Protein digestion
- D. Cell wall formation

6. An antibiotic-resistance marker mainly helps identify

- A. Cells carrying the vector
- B. All untransformed cells only
- C. Every cell with a nucleus
- D. Cells without ribosomes

7. Insertional inactivation identifies recombinants by

- A. Doubling every chromosome
- B. Disrupting a marker gene
- C. Removing all DNA
- D. Blocking all cell division

8. A bacterium made competent can

- A. Become an animal cell
- B. Take up foreign DNA more efficiently
- C. Always make gametes
- D. Lose all enzymes

9. PCR requires a thermostable polymerase because the reaction includes

- A. Permanent freezing
- B. Continuous acid boiling
- C. No template DNA
- D. Repeated high-temperature denaturation

10. PCR primers provide

- A. Restriction sites only
- B. Free 3' ends for DNA extension
- C. The final protein product
- D. A source of amino acids

11. Starting with one DNA target, ideal PCR doubling for 5 cycles gives

- A. 10 copies
- B. 25 copies
- C. 32 copies
- D. 5 copies

12. During agarose electrophoresis, DNA moves towards the

- A. Air above the gel
- B. Well centre only
- C. Positive electrode
- D. Negative electrode

13. Shorter DNA fragments generally move through agarose

- A. Farther than longer fragments
- B. Only towards the negative electrode
- C. Exactly the same distance
- D. Less far than longer fragments

14. A bioreactor chiefly provides

- A. Only gel staining
- B. Controlled conditions for large-scale biological production
- C. Only DNA sequencing
- D. Uncontrolled outdoor exposure

15. Downstream processing includes

- A. Product separation and purification
- B. Only inserting a gene
- C. Only PCR denaturation
- D. Only preparing agarose

ANSWER KEY — check after completing all 15 questions

1.A 2.B 3.C 4.A 5.B 6.A 7.B 8.B 9.D 10.B 11.C 12.C 13.A 14.B 15.A