

**Class: 12**  
**Subject: Biology**  
**Topic: Biotechnology and its Applications**  
**No. of Questions: 20**  
**Duration: 60 Min**  
**Maximum Marks: 60**

1. Identify the plasmid
- A. EcoRI
  - B. pBR 322
  - C. AIUI
  - D. Hind III

Ans. B

2. Common cytokinin of tissue culture is
- A. Benzylaminopurine
  - B. Kinetin
  - C. Zeatin
  - D. Dihydrozeatin

Ans. A

3. Which is related to genetic engineering?
- A. Plastid
  - B. Plasmid
  - C. Heterosis
  - D. Mutation

Ans. B

4. Development of shoot and root in tissue culture is determined by
- A. Cytokinin and auxin ratio
  - B. Enzymes
  - C. Temperature
  - D. Plant nutrients

Ans. A

5. The enzymes which are commonly used in genetic engineering are
- A. Restriction endonuclease and polymerase
  - B. Endonuclease and ligase
  - C. Restriction endonuclease and ligase
  - D. Ligase and polymerase

Ans. C

6. Importing better varieties and plants from outside and acclimitising them to local environment is
- A. Selection
  - B. Cloning
  - C. Introduction
  - D. Heterosis

Ans. C

7. Escherichia coli is
- A. Gut bacterium
  - B. Soil bacterium
  - C. Thermal bacterium
  - D. Both A and B

Ans. A - E. coli lives in the small intestine of humans

8. Pathogen free plants can be obtained through
- A. Clean cultivation
  - B. Embryoid cultivation
  - C. Bud or shoot tip propagation on culture medium
  - D. Grafting

Ans. C

9. Which one is mutagenic agent?
- A. Nitrous acid
  - B. X-ray
  - C. Ethyl methane sulphonate
  - D. All the above

Ans. D

10. Bread Wheat
- A. Tetraploid
  - B. Hexaploid
  - C. Diploid
  - D. Pentaploid

Ans. B

11. Plasmids contain
- A. RNA
  - B. RNA+ Protein
  - C. Photosynthetic lamellae
  - D. DNA

Ans. D

12. Bagging is done to
- A. Achieve desired pollination
  - B. Prevent contamination from unwanted pollen
  - C. Avoid self-pollination
  - D. Avoid cross pollination

Ans. B

13. New varieties of plants are produced by
- A. Selection and hybridisation
  - B. Mutation and selection
  - C. Introduction and mutation
  - D. Selection and introduction

Ans. A

14. Which one is required for protoplast fusion?
- A. Treatment with cellulase and pectinase
  - B. Electrofusion or PEG treatment
  - C. Both A and B
  - D. Recombinant DNA technology

Ans. C

Solution: The somatic (protoplast) fusion process occurs in four steps:

1. The removal of the cell wall of one cell of each type of plant using cellulase enzyme to produce a somatic cell called a protoplast
2. The cells are then fused using either an electric shock (electrofusion) to join the cells or the nuclei fused together or by chemical treatment. The resulting fused nucleus is called heterokaryon.
3. The somatic hybrid cell then has its cell wall induced to form using hormones
4. The cells are then grown into calluses which then are further grown to plantlets and finally to a full plant, known as a somatic hybrid.

15. Which one will be searched for obtaining maximum genetic diversity?
- A. Recent varieties
  - B. Old varieties
  - C. Wild relatives
  - D. All the above

Ans. D

16. Process used for amplification or multiplication of DNA for fingerprinting is
- A. Polymerase chain reaction
  - B. Nesslerisation
  - C. Southern blotting
  - D. Northern blotting

Ans. A

17. Increased flavorful shelf life of Tomato has been achieved by
- A. Developing better storage technique
  - B. Reducing activity of enzyme polygalacturonase
  - C. Promoting activite of enzyme polygalacturonase
  - D. Enhancing epidermal growth factor

Ans. B

Solution: Polygalacturonase helps in the ripening of tomatoes

18. Transgenic pigs with genes for human antigens will be useful for
- A. Providing best human foods
  - B. Resistance to common human diseases
  - C. Having all important blood factors
  - D. Organ transplantation

Ans. D

Solution: If the transgenic pigs carry genes for human antigens then during organ transplantation there will be less chances of a graft rejection by the self-antibodies

19. Norin -10 gene is dwarfing gene of
- A. Wheat
  - B. Rice
  - C. Maize
  - D. Mustard

Ans. A

20. Which enzyme is useful in genetic engineering?
- A. DNA-ase
  - B. Amylase
  - C. Lipase
  - D. Restriction endonuclease

Ans. D