

**M. Sc. BIOTECHNOLOGY**  
**SECOND SEMESTER**  
**PLANT & ANIMAL BIOTECHNOLOGY**  
**MBT – 201 ( REPEAT )**

(Use Separate Answer Scripts for Objective & Descriptive)

Duration : 3 hrs.

Full Marks : 70

**[ PART-A : Objective ]**

Time : 20 min.

Marks : 20

Choose the correct answer from the following:

1×20=20

1. Which enzyme is used for disaggregation of embryonic ,normal and malignant tissue
  - a. Trypsin
  - b. Luciferase
  - c. Collagenase
  - d. All of these
2. Transposon is an immovable genetic element
  - a. True
  - b. False
3. The transmembrane receptor for Hedgehog are \_\_\_\_\_
  - a. Serine kinase receptor
  - b. Patched receptor
  - c. Smoothened receptor
  - d. Both (b) and (c)
4. Which group of plant growth regulators help in formation of roots
  - a. Gibberelic acid
  - b. Ethylene
  - c. Auxin
  - d. Cytokinin
5. Transpharmers are \_\_\_\_\_
  - a. Transgenic animals which produce pharmaceutical compounds
  - b. Transgenic animals which produce organs for transplantation
  - c. Transgenic animals which produce growth promoting hormones
  - d. Transgenic animals which produce proteins
6. The culture method where withdrawal of media alongwith cells and addition of equal volume of fresh medium with new explants is called \_\_\_\_\_
  - a. Batch culture
  - b. Semi-continuous batch culture
  - c. Perfusion culture
  - d. Continuous culture
7. Pectinase is an animal cell degrading enzyme
  - a. True
  - b. False
8. Cells devoid of cell walls are known as
  - a. Protoplast cells
  - b. Somatic cells
  - c. Haploid cells
  - d. Callus cells

9. Homogenous plant populations can be developed through callus culture
  - a. True
  - b. False
10. A normally fertilized oocytes contains \_\_\_\_\_
  - a. 2 pronuclei and 1 polar body
  - b. 2 pronuclei and 2 polar bodies
  - c. 1 pronucleus and 2 polar bodies
  - d. 2 pronuclei and 3 polar bodies
11. Suspension culture technology provides scope of producing secondary metabolites from medicinal and aromatic plants
  - a. True
  - b. False
12. Cooking, for the first time used cell wall degrading enzymes in protoplast isolation
  - a. True
  - b. False
13. Ti Plasmid is present in
  - a. Bacillus spp
  - b. Staphylococcus spp
  - c. Agrobacterium spp
  - d. Candida spp
14. All cells of a living organisms are totipotent
  - a. True
  - b. False
15. The pH of a tissue culture culture medium is maintained above seven
  - a. True
  - b. False
16. Agrobacterium uses Opines as a source of
  - a. Nitrogen
  - b. Energy
  - c. Carbon
  - d. Oxygen
17. Agrobacterium mediated gene transfer is a successful beginning of transgenic technology
  - a. True
  - b. False
18. Chlorophyll de-pigmentation of plant is the deficiency symptom of Manganese (Mn)
  - a. True
  - b. False
19. Human embryonic stem cells are derived from
  - a. 2-4 cell stage
  - b. 8 cell stage
  - c. 24 cell stage
  - d. None of these
20. Sucrose is used as hormone source in plant tissue culture media
  - a. True
  - b. False

**( PART-B : Descriptive )**

Time : 2 hrs. 40 min.

Marks : 50

*[ Answer question no.1 & any four (4) from the rest ]*

1. What is in vitro fertilization? Describe the process of IVF in human. 2+ 8=10
2. What is the principle of micropropagation? Throw light on the merits and demerits of the *in vitro* mass propagated crop plants. 3+7=10
3. Define adult stem cells. How do they regenerate? Describe the canonical pathway of Wnt signalling pathway. 2+3+5=10
4. What is somatic hybridization? What are the advantages and disadvantages of somatic hybridization? Mention few applications of somatic hybridization techniques? 2+5+3=10
5. What is the role of Ti plasmid and T-DNA in Agrobacterium mediated gene transfer. What are the advantages of Agrobacterium mediated gene transfer? 5+5=10
6. What do you mean by somaclonal variation? How soma-clones can be induced? Explain its scope of utilization in plant breeding for development of improved crop plants. 2+3+5=10
7. What is plant tissue culture medium? Explain the basic composition of a tissue culture medium. Explain the role played by N, P, K and Mg in the medium on the explants. 2+4+4=10
8. Write short notes on the following: 2x5=10
  - a. Laminar Air Flow
  - b. Totipotency
  - c. Sterilization of explants
  - d. Importance of salt in animal culture media
  - e. Transgenic mouse

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