REV-01
BBT/12/15

2022/12

SET A

B.Sc. BIOTECHNOLOGY
FIFTH SEMESTER
PLANT BIOTECHNOLOGY
BBT-503

[USE OMR SHEET FOR OBJECTIVE PART]

Duration: 3 hrs. **Full Marks: 70**

(Objective)

Time: 30 mins. **Marks: 20**

Choose the correct answer from the following: ***1×20=20***

1. Who is the father of plant tissue culture?
   a. Gottlieb Haberlandt b. Gonard Haberlandt
   c. James Haberlandt d. All of these
2. Which temperature is adequate for callus formation?
   a. 22-28^{0}C b. 23-28^{0}C
   c. 26-28^{0}C d. All of these
3. B5 medium is developed by:
   a. Gamborg b. Chu
   c. Gottlieb Haberlandt d. Murashige and Skoog
4. What is role of Auxin?
   a. Root development b. Cell Division
   c. Callus induction d. All of these
5. The optimal pH of Plant Tissue Culture is:
   a. 5-6 b. 5.5-5.8
   c. 6 d. All of these
6. Which is important for growth regulation for induction of embryogenesis?
   a. Auxins b. Gibberellins
   c. Abscisic acid d. All of these
7. Which of the following inhibits cell division in protoplast culture?
   a. X-rays b. μ-rays
   c. λ-rays d. None of these
8. The first successful regeneration of protoplast was achieved by:
   a. Tekebe b. Dekebe
   c. Rakabe d. None of these
9. Which of the following is responsible for hairy root disease?
   a. *A. rhizogenes* b. *R. rhizogenes*
   c. *A. rhizogenes* d. None of these
10. Which vegetables are regenerated from protoplast?
    a. *Capsicum annuum* b. *Brassica oleracea*
    c. *Cucumis sativus* d. All of these

11. Which gene has **NO** essential functions in CaMV?
    a. II
    b. VI
    c. VIII
    d. All of these

12. Commercially produced particle bombardment apparatus is:
    a. PDS-1000/HC
    b. PDS-1000/CH
    c. DDS-1000/HC
    d. All of these

13. Which stain binds to the newly formed cell walls?
    a. Calcofluor white
    b. Evans blue dye
    c. Fluorescein diacetate
    d. None of these

14. In-plant tissue culture, the callus tissues are generated into a complete plantlet by altering the concentration.....
    a. Hormones
    b. Amino acids
    c. Sugars
    d. All of these

15. What is Callus?
    a. An unorganized actively dividing mass of cells maintained in culture
    b. Tissues that grow to form an embryoid
    c. Both a & b
    d. An unorganized actively non-dividing mass of cells maintained in culture

16. Which enzymes are used for protoplast isolation?
    a. Pectinase
    b. Cellulase
    c. Hemicellulase
    d. All of these

17. The pair of hormones required for a callus to differentiate are.....
    a. Auxin and cytokinin
    b. Ethylene and Auxin
    c. Auxin and Abscisic acid
    d. None of these

18. The production of secondary metabolites requires the use of.....
    a. Cell suspension
    b. Axillary buds
    c. Protoplast
    d. All of these

19. The entry of bacterium into the plant tissues is facilitated by:
    a. Acetosyringone
    b. Hydroxyacetosyringone
    c. Both a & b
    d. All of these

20. Which is the non-ionic osmoticum?
    a. Sorbitol
    b. KCL
    c. $CaCl_2$
    d. All of these

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Descriptive

Time : 2 hr. 30 mins. Marks : 50

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

1.	Give detailed account of constituents of Plant tissue culture media.	10
2.	Write a short note on: a) Basic techniques of plant tissue culture b) Callus culture	5+5=10
3.	Give details on isolation, culture, and regeneration of Protoplast.	4+3+3=10
4.	Give details on the cell culture of plants.	10
5.	Write a short note on: a) Technique of Micropropagation b) Meristem & Shoot tip culture	10
6.	What is a plant bioreactor? Brief on metabolic engineering of carbohydrates.	10
7.	Give a detailed account on the Biolistic or Particle bombardment method of gene transfer.	10
8.	Describe Anther and Microspore culture with detailed figures.	5+5=10

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