

(Pages : 4)

V – 5461

Reg. No. :

Name :

Fourth Semester M.Sc. Degree Examination, June 2025

Botany

BO 242 a : BIOTECHNOLOGY

(2019 Admission Onwards)

Time : 3 Hours

Max. Marks : 75

Instruction: Draw diagrams and illustrate with examples wherever necessary.

- I. Answer the following questions.
1. What is indirect regeneration?
2. Name four industrial chemicals produced by microbial activity.
3. What are cosmids?
4. What is lipofection?
5. What is dedifferentiation?
6. What is basal medium?
7. Specify the time, temperature and amount of pressure which is strictly required for sterilizing the nutrient medium.
8. Which biomolecules are blotted in Southern and Northern blotting?
9. Give the names of two microbes used for the commercial production of organic acids.
10. What are bioreactors?

(10 × 1 = 10 Marks)

P.T.O.



II. Answer the following questions in not more than 50 words.

11. (a) Write notes on the culture conditions used for producing secondary metabolites.

OR

- (b) What is cell immobilization?

12. (a) Explain the reasons for the formation of somaclonal variations.

OR

- (b) What is RTPCR?

13. (a) Define Rhizogenesis and Caulogenesis.

OR

- (b) Differentiate between callus and embryoids.

14. (a) What unique feature of Taq polymerase makes it useful in PCR? How?

OR

- (b) Give a list of the plant growth regulators commonly used in plant tissue culture media.

15. (a) What are probiotics? What types of organisms are there in probiotics?

OR

- (b) What is somatic hybridization? Explain its procedure.

(5 × 2 = 10 Marks)

III. Answer the following questions in not more than 150 words.

16. (a) Describe the methods used for the isolation of plant protoplast for in vitro culture. Add a note on the applications of protoplast culture.

OR

- (b) How does TDNA used to produce transgenic plants?



17. (a) Describe golden rice.

OR

(b) Write a critical account on germline gene therapy.

18. (a) What are the factors that influence shoot bud differentiation during tissue culture?

OR

(b) Comment on the disadvantages of GMOs.

19. (a) Write a brief note on restriction enzymes. How are they named?

OR

(b) Write a brief account on the use of microbes in the commercial production of enzymes.

20. (a) Explain the different steps involved in downstream processing.

OR

(b) Write a brief account on the methods and applications of enzyme immobilization.

21. (a) 'A protein of interest can be produced by using GM microbes' Explain.

OR

(b) Compare and contrast RAPD and RFLP.

22. (a) Differentiate linkers and adapters used to join DNA fragments from different sources.

OR

(b) Define explant. How are explants prepared for culture?

(7 × 5 = 35 Marks)



IV. Answer the following in not more than **250** words.

23. (a) Explain the direct and indirect methods of plant transformation.

OR

(b) Explain the steps involved in the construction of a cDNA library. Compare the cDNA library and genomic library and mention the advantages of cDNA library over genomic library.

24. (a) Enumerate the applications of plant tissue culture. Add a note on the disadvantages of tissue culture.

OR

(b) Write an essay on the issues of concern to mankind, associated with modern biotechnology.

(2 × 10 = 20 Marks)

