

Reg. No

Name

23P4031

M. Sc. DEGREE END SEMESTER EXAMINATION : MARCH 2023

SEMESTER 4 : BOTANY

COURSE : 21P4BOTT15 : TISSUE CULTURE AND MICROBIAL BIOTECHNOLOGY

(For Regular - 2021 Admission)

Duration : Three Hours

Max. Weights: 30

PART A

Answer any 8 questions

Weight: 1

1. What are the most useful modifications made in the growth medium to promote secondary metabolite production? (R, CO 1, CO 3)
 2. What changes happen to a plant cell undergoing dedifferentiation (U, CO 1, CO 3)
 3. Give a brief account of the contributions of Muir (1953) in the field of tissue culture (R, CO 1, CO 3)
 4. Write the principle of enzyme engineering. (U, CO 4)
 5. Write a short note on oligopotent cells. (A, CO 2)
 6. Briefly describe Thawing. (U, CO 1, CO 5)
 7. What do you mean by *in vitro* induced variations? (U, CO 1, CO 3, CO 6)
 8. Describe the different types of organized cultures. (An)
 9. Discuss the factors influencing vascular differentiation in callus. (A)
 10. Write the applications of stem cells. (U, CO 2)
- (1 x 8 = 8)**

PART B

Answer any 6 questions

Weights: 2

11. Write a note on adult stem cells and its sources. (A, CO 2)
 12. Briefly explain PEG mediated protoplast fusion. (U, CO 1, CO 3)
 13. Briefly explain Anther culture. (U, CO 1, CO 3, CO 6)
 14. Explain the different methods of cell immobilization. (A, CO 2)
 15. What is somatic embryogenesis? Briefly explain the steps involved. (U, CO 1, CO 3)
 16. What is Cryopreservation? Explain. (R, CO 1, CO 5)
 17. Elaborate on the various Sterlization methods used in plant tissue culture. (A)
 18. Explain the applications of enzyme engineering. (U, CO 2)
- (2 x 6 = 12)**

PART C
Answer any 2 questions

Weights: 5

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| 19. | What is endosperm culture? What are the factors affecting endosperm culture? Give an account of its applications and limitations. | (U, CO 1, CO 3, CO 6) |
| 20. | Explain the procedure and applications of hairy root culture. | (U, CO 1, CO 3) |
| 21. | What is synthetic seed? Explain the <i>in vitro</i> synseed production methods. Give an account of its advantages and disadvantages. | (R, CO 1, CO 3) |
| 22. | Explain micropropagation. What are the applications, advantages and disadvantages of this technique? | (R, CO 1, CO 3) |
| | | (5 x 2 = 10) |

OBE: Questions to Course Outcome Mapping

CO	Course Outcome Description	CL	Questions	Total Wt.
CO 1	Examine the basic aspects of plant tissue culture.	A	1, 2, 3, 6, 7, 12, 13, 15, 16, 19, 20, 21, 22	33
CO 2	Describe the fundamentals of microbial biotechnology.	U	5, 10, 11, 14, 18	8
CO 3	Evaluate the different methods and processes involved in plant tissue culture.	E	1, 2, 3, 7, 12, 13, 15, 19, 20, 21, 22	30
CO 4	Describe the scope and relevance of Bioreactors and fermentation technology.	U	4	1
CO 5	Describe the in vitro germplasm conservation strategies.	U	6, 16	3
CO 6	Analyze the somaclonal and ploidy variants.	An	7, 13, 19	8

Cognitive Level (CL): Cr - CREATE; E - EVALUATE; An - ANALYZE; A - APPLY; U - UNDERSTAND; R - REMEMBER;