

Reg. No

Name

24P4007

M. Sc. DEGREE END SEMESTER EXAMINATION - MARCH 2024

SEMESTER 4 - BOTANY

COURSE : 21P4BOTT13 - GENETIC ENGINEERING

(For Regular 2022 Admission & Supplementary 2021 Admission)

Duration : Three Hours

Max. Weights: 30

PART A

Answer any 8 questions

Weight: 1

1. Write the applications of GM microbes. (A, CO 4)
2. Explain about insitu hybridization. (U, CO 4)
3. Write a short note on TALEN. (A, CO 4)
4. What is IES? (R, CO 1, CO 2, CO 5, CO 6)
5. Write a short note on ZFN. (A, CO 4, CO 6)
6. Explain the process of selection of transformed cells using pBR322. (An, CO 1, CO 2, CO 3)
7. Write a short note on the carbon and nitrogen source of *Agrobacterium tumefaciens*. (R)
8. What is a selectable marker gene? Give example. (U, CO 1, CO 2, CO 3)
9. Explain the naming of restriction endonucleases. (A, CO 1, CO 2, CO 3)
10. Write notes on opine synthesis genes. (Cr)
(1 x 8 = 8)

PART B

Answer any 6 questions

Weights: 2

11. Differentiate between Chromosome walking and Chromosome jumping. (E, CO 6)
12. Explain the applications of GM animals. (A, CO 4)
13. Critically evaluate viruses as cloning vectors. (A, CO 1, CO 2, CO 3, CO 5)
14. Differentiate between binary vector system and cointegrate vector system. (An, CO 1, CO 2, CO 3, CO 5)
15. Explain the steps involved in genome editing. (An, CO 4)
16. Explain the selection of transformed bacterial cells using pUC8 vector system. (R, CO 1, CO 2, CO 3, CO 5)
17. Give an account on oligonucleotide directed mutagenesis with M₁₃ DNA. (U, CO 1, CO 2, CO 5, CO 6)
18. Describe the process of construction of genomic library using phage λ system. (U, CO 4)
(2 x 6 = 12)

PART C
Answer any 2 questions

Weights: 5

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|-----|------------------------------------------------------------------------------------|-----------------------|
| 19. | Discuss different methods for the identification of desirable clones from library. | (E, CO 4) |
| 20. | Explain the isolation and purification of plasmid DNA from bacterial cells. | (An) |
| 21. | Explain the different applications of genome editing. | (U, CO 4) |
| 22. | How Ti plasmid can be used for genetic engineering in plants? | (U, CO 1, CO 2, CO 5) |
| | | (5 x 2 = 10) |

OBE: Questions to Course Outcome Mapping

CO	Course Outcome Description	CL	Questions	Total Wt.
CO 1	Define scope, significance and applications of recombinant DNA technology	U	4, 6, 8, 9, 13, 14, 16, 17, 22	17
CO 2	Explain the various tools and techniques in recombinant DNA technology	U	4, 6, 8, 9, 13, 14, 16, 17, 22	17
CO 3	Apply the novel findings of recombinant DNA technology in the field of agricultural, medicine or basic research.	A	6, 8, 9, 13, 14, 16	9
CO 4	Examine the scope and relevance of genome editing as a stable method of genome manipulation	Cr	1, 2, 3, 5, 12, 15, 18, 19, 21	20
CO 5	Evaluate the potential applications of recombinant DNA technology in the field of agricultural, medicine or basic research.	E	4, 13, 14, 16, 17, 22	14
CO 6	Formulate novel techniques or procedures for genome manipulation	Cr	4, 5, 11, 17	6

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