Reg. No ..... Name **23P4007**

M. Sc. DEGREE END SEMESTER EXAMINATION : MARCH 2023

SEMESTER 4 : BOTANY

COURSE : **21P4BOTT13 : GENETIC ENGINEERING**

(For Regular - 2021 Admission)

Duration : Three Hours Max. Weights: 30

PART A

Answer any 8 questions **Weight: 1**

1.	Describe the role of acetosyringone in *Agrobacterium tumefaciens* infection.	(An, CO 1, CO 2, CO 3)
2.	What is meant by site directed mutagenesis?	(U, CO 1, CO 2, CO 5, CO 6)
3.	Instead of lactose a lactose analogue is used in blue-white screening. Justify	(An, CO 1, CO 2, CO 3)
4.	Differentiate between Adaptors and Linkers.	(An, CO 4)
5.	Write a short note on CRISPR/Cas9.	(U, CO 2, CO 4)
6.	Write the applications of GM plants.	(A, CO 4)
7.	Explain the advantages of pUC vectors over pBR322.	(An, CO 1, CO 2, CO 3)
8.	Write the principle of genome editing.	(U, CO 4)
9.	Diagrammatically explain the structure of Ti plasmid.	(Cr)
10.	Write notes on positional cloning .	(R)

(1 x 8 = 8)

PART B

Answer any 6 questions **Weights: 2**

11.	Explain the applications of GM animals.	(A, CO 4)
12.	Discuss the opine synthesis and tumour causing genes of Agrobacterium tumefaciens.	(Cr)
13.	Evaluate homopolymer tailing as a method of adding sticky ends onto blunt-end fragments.	(E, CO 1, CO 2, CO 3, CO 5)
14.	Describe briefly about FISH and GISH.	(A, CO 2)
15.	Differentiate between site-specific recombination and homologous recombination.	(An, CO 1, CO 2, CO 3, CO 5)
16.	Differentiate betweeen Genomic DNA and cDNA and their significances.	(U, CO 4)
17.	Explain the selection of transformed cells by Lac Z system.	(A)
18.	Write an essay on the applications of genome editing.	(R)

(2 x 6 = 12)

PART C

Answer any 2 questions **Weights: 5**

19. Describe the different techniques to identify the different clones from library. (An, CO 4)

20. Explain the development of binary and cointegrate vector systems. (R, CO 2, CO 3, CO 5, CO 6)

21. Explain any two methods of genome editing. (E, CO 4)

22. Explain the properties and functions of restriction enzymes and ligases in rDNA technology. (E, CO 1, CO 2)

(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	1, 2, 3, 7, 13, 15, 22	13
CO 2	Explain the various tools and techniques in recombinant DNA technology	U	1, 2, 3, 5, 7, 13, 14, 15, 20, 22	21
CO 3	Apply the novel findings of recombinant DNA technology in the field of agricultural, medicine or basic research.	A	1, 3, 7, 13, 15, 20	12
CO 4	Examine the scope and relevance of genome editing as a stable method of genome manipulation	Cr	4, 5, 6, 8, 11, 16, 19, 21	18
CO 5	Evaluate the potential applications of recombinant DNA technology in the field of agricultural, medicine or basic research.	E	2, 13, 15, 20	10
CO 6	Formulate novel techniques or procedures for genome manipulation	Cr	2, 20	6

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