Reg. No ....   Name **23P4007-S**

M. Sc. DEGREE END SEMESTER EXAMINATION - MARCH 2023
SEMESTER 4 : BOTANY
COURSE : **16P4BOTT13: BIOTECHNOLOGY AND GENETIC ENGINEERING**
(For Supplementary - 2016/2017/2018/2019/2020 Admissions)

Time : Three Hours   Max. Marks: 75

PART A
Answer any 8 (2 marks each)

1.   How protein contamination in nucleic acid can be removed?
2.   What is phagemid? Give an example.
3.   What are competent cells? How can you induce competence?
4.   What is T-DNA?
5.   What is the use of Benzoyl reagent in chemical synthesis of DNA?
6.   What are the limitations of natural inducible expression systems?
7.   Expand GEAC. What are the functions of GEAC?
8.   What do you mean by DNA shuffling?
9.   Explain potentiometric biosensors.
10. Give an account on shotgun cloning method for the construction of genomic library.
11. Explain RIA.
12. Comment on golden rice.

                                                                                                      (2 x 8 = 16)

PART B
Answer any 7 (5 marks each)

13. What are the applications of ligase enzyme in genetic engineering? Explain the mechanism of ligase action.
14. Explain the selection of transformed cells using pBR322 vector system.
15. Differentiate between binary vector system and cointegrate vector system.
16. What is phosphoramidite nucleotide? Explain its structure with a diagram.
17. Briefly explain the principle, procedure and applications of RNAi
18. Critically evaluate the impact of GMOs on the ecosystem.
19. Describe a method for protein mutagenesis.
20. Give an account on the various types of biosensors.
21. Give an account on uses of genomic library.
22. Differentiate gene augmentation therapy and gene inhibition therapy.

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PART C
Answer any 2 (12 marks each)

23. What are the steps involved and applications of cloning? Differentiate between topocloning and gateway cloning.
24. Explain naturally occurring and recombinant inducible expression systems with suitable examples.
25. Write an essay on the procedure and applications of DNA profiling and footprinting
26. Write an essay on genetically modified organisms.

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