

Reg. No

Name

25P2022

M. Sc. DEGREE END SEMESTER EXAMINATION - APRIL 2025

SEMESTER 2 : BOTANY

COURSE : 24P2BOTT06 : MOLECULAR BIOLOGY AND IMMUNOLOGY

(For Regular - 2024 Admission)

Duration : Three Hours

Max. Weights: 30

PART A

Answer any 8 questions

Weight: 1

1. Analyze the role of RNA primer in DNA replication. (An)
2. Explain inducers and repressors. (An)
3. Explain G-quadruplex DNA. (U)
4. Enlist different polymerase with their respective roles in the prokaryotic DNA replication. (U)
5. Write any two advantages of subunit vaccines. (R)
6. Briefly explain the process of t-RNA charging. (U)
7. What is the significance of HGPRTase in Hybridoma technology? (R)
8. Give an account on the regulation of Lac Operon. (U)
9. Differentiate major and minor grooves in DNA double helix. (An)
10. What is the role of helper T cells in immunity? (U)

(1 x 8 = 8)

PART B

Answer any 6 questions

Weights: 2

11. Explain the mechanism of inflammation. (U)
12. Compare the roles of general transcription factors and transcriptional activator proteins. (E)
13. What are the biological roles of site specific recombination? (U)
14. Describe the structure and functions of piRNA, snoRNA and lncRNA. (U)
15. Give an account on RNA polymerase II. (U)
16. Proof reading and fidelity are two major roles other than polymerization by polymerase, analyze. (An)
17. Differentiate between gene regulation in prokaryotes and eukaryotes. (E)
18. Briefly explain RNA polymerase I promoters. (A)

(2 x 6 = 12)

PART C

Answer any 2 questions

Weights: 5

19. Illustrate and discuss the structure and functions of various antibody molecules. (E)
20. Briefly explain the various mechanisms by which translation is regulated. (R)
21. Write an essay on DNA damage and its various causes. (U)
22. Draw a typical eukaryotic gene and the pre-mRNA and mRNA derived from it. Assume that the gene contains three exons. Identify the following items and for each item, give a brief description of its function: (A)

- a) 5' untranslated region
- b) promoter
- c) AAUAAA sequence
- d) Transcription start site
- e) 3'untranslated region
- f) Introns
- g) Exons
- h) Poly(A) tail
- i) 5'Cap

(5 x 2 = 10)

OBE: Questions to Course Outcome Mapping

CO	Course Outcome Description	CL	Questions	Total Wt.
----	----------------------------	----	-----------	-----------

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