

Reg. No .....

Name .....

24P2045

**M. Sc. DEGREE END SEMESTER EXAMINATION - MARCH 2024**

**SEMESTER 2 - BOTANY**

**COURSE : 21P2BOTT08 - GENETICS AND BIOCHEMISTRY**

*(For Regular 2023 Admission and Improvement/Supplementary 2022/2021 Admissions)*

Duration : Three Hours

Max. Weights: 30

**PART A**

**Answer any 8 questions**

**Weight: 1**

1. Differentiate between H-W equilibrium and dynamic equilibrium. (An)
  2. Write short notes on: (a) Zymogen, (b) Prosthetic group (U, CO 5)
  3. Why Glycine is regarded as an achiral amino acid? (A)
  4. What is the significance of MEP pathway? (A, CO 5, CO 6)
  5. What is the difference between alkali and base? (U, CO 4)
  6. Draw the structure of a tripeptide. Label the N and C terminal ends. (U, CO 4, CO 5)
  7. What is the function of polycomb repressive complex 2 (PRC2) protein? (U)
  8. What is the relation between recombination frequency and map distance? (U)
  9. Explain the role of carnitine in fatty acid transport. (An)
  10. What are lectins? (R)
- (1 x 8 = 8)**

**PART B**

**Answer any 6 questions**

**Weights: 2**

11. Describe the structure and functions of FAD and FMN. (A, CO 4)
  12. How are epigenetic changes retained and replicated through the process of cell division? Explain with an example. (A)
  13. What is Ramachandran plot? Explain its significance. (U, CO 4, CO 5)
  14. "All enzymes are proteins but all proteins are not enzymes". Comment on the validity of the statement. (A, CO 5)
  15. Before 1800, thousands of elephant seals were found along the California coast, but the population was devastated by hunting between 1820 and 1880. By 1884, as few as 20 seals survived on a remote beach in California. Restrictions on hunting enacted by the United States and Mexico allowed the seals to recover, and there are now more than 30,000 seals in the population. All seals in the population today are genetically similar. Explain the reason for their genetic similarity. (A)
  16. Briefly describe the biosynthesis of pyrimidine nucleotides. (U, CO 5)
  17. Differentiate between Glycoproteins and proteoglycans. (An)
  18. Explain the conversion of proto-oncogenes to cellular oncogenes. (U)
- (2 x 6 = 12)**

**PART C**  
**Answer any 2 questions**

**Weights: 5**

19. Explain the IUB system of enzyme classification and naming. (U, CO 4, CO 5, CO 6)
20. Explain beta-oxidation of fatty acids. (An, CO 5, CO 6)
21. Discuss the various factors affecting H-W equilibrium in a population. (An)
22. With the help of a suitable example, explain the three-point testcross experiment and determination of map distance. (A)

**(5 x 2 = 10)**

OBE: Questions to Course Outcome Mapping

CO	Course Outcome Description	CL	Questions	Total Wt.
CO 4	Identify and compare the structure and functions of biomolecules.	An	5, 6, 11, 13, 19	11
CO 5	Explain genetics behind cancer, enzymology, nucleotide metabolism and secondary metabolites.	U	2, 4, 6, 13, 14, 16, 19, 20	19
CO 6	Perceive detailed account on enzymology, nucleotide metabolism and secondary metabolites.	An	4, 19, 20	11

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