M. Sc. DEGREE END SEMESTER EXAMINATION : MARCH 2023
SEMESTER 2 : BOTANY
COURSE : **21P2BOTT08 : GENETICS AND BIOCHEMISTRY**
(For Regular - 2022 Admission and Supplementary - 2021 Admission)

Duration : Three Hours   Max. Weights: 30

PART A
Answer any 8 questions   Weight: 1

1. What is incomplete penetrance? Give example.   (U)
2. What is Coupling and Repulsion?   (R)
3. Differentiate between H-W equilibrium and dynamic equilibrium.   (An)
4. What is pKa?   (U, CO 4)
5. What are Glycoproteins?   (R)
6. What is gluconeogenesis?   (R)
7. With suitable examples differentiate between essential and non-essential amino acids.   (R, CO 4, CO 5, CO 6)
8. What is meant by partial double bond character?   (A, CO 4, CO 5)
9. Write short notes on: (a) Zymogen, (b) Prosthetic group   (U, CO 5)
10. Briefly explain the precursors for the synthesis of Terpenoid compounds.   (U, CO 4, CO 6)

(1 x 8 = 8)

PART B
Answer any 6 questions   Weights: 2

11. What is DNA methylation? Explain its role in epigenetics.   (U)
12. In a population, the frequency of LM allele is 0.78. If the population is in H-W equilibrium, calculate the genotypic and phenotypic frequency.   (E)
13. Compare the properties of cancer and normal cells.   (U)
14. Differentiate between Glycoproteins and proteoglycans.   (An)
15. What is Ramachandran plot? Explain the significance.   (U, CO 4, CO 5)
16. Explain the structure and functions of ATP.   (U, CO 5)
17. Write short notes on (a) cofactor, (b) coenzyme, (c) apoenzyme, (d) holoenzyme   (A, CO 4, CO 5)
18. What are the functions of nucleotides?   (U, CO 5, CO 6)

(2 x 6 = 12)

PART C
Answer any 2 questions   Weights: 5

19. With the help of a suitable example, explain the two-point testcross experiment and determination of map distance.   (A)
20. Describe the five conditions required for a population to be in Hardy-Weinberg equilibrium.   (U)

21. Explain the steps in fatty acid biosynthesis. (A)

22. Explain Michaelis-Menton kinetics. What is the significance of KM and Vmax values? (U, CO 5, CO 6)

(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	4, 7, 8, 10, 15, 17	8
CO 5	Explain genetics behind cancer, enzymology, nucleotide metabolism and secondary metabolites.	U	7, 8, 9, 15, 16, 17, 18, 22	16
CO 6	Perceive detailed account on enzymology, nucleotide metabolism and secondary metabolites.	An	7, 10, 18, 22	9

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