

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST -2 EXAMINATION- 2023

M.Sc.-Ist Semester (B.T. and Microbiology)

COURSE CODE (CREDITS): 20MS1BT111 (3)

MAX. MARKS: 25

COURSE NAME: **Biochemistry**

COURSE INSTRUCTOR: **Jitendraa Vashistt**

MAX. TIME: 1 Hour30 min.

Note: (a) All questions are compulsory.

(b) Marks are indicated against each question in square brackets.

(c) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

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- Q1. You are provided the mixture of proteins, among which proteins with positively charged has to be purified. Design a purification strategy with suitable matrix for isolation of above mentioned proteins: (4 marks)
- Q2. What are the similarities and dissimilarities between glucose, galactose and mannose? Justify your answer with structural elucidations. (4 marks)
- Q3. How do you identify that a sugar is reducing or non-reducing in nature? What is application of the test in diagnostics? (4 marks)
- Q4. Glycoproteins as well as proteoglycans have proteins in their basic structures; however, these two moieties are differed from each other. Define the structural difference of both and also explain the biological significance of both structures? (4marks)
- Q5. Explain, how pH, temperature and substrate factors responsible for increment and decrease of enzymatic activity? (4 marks)
- Q6. An enzymatic reaction is occurring with V_{max} of 100 mmoles/sec and it has K_M of 0.5mM. At what substrate concentration will the velocity of the enzyme (V_o) reaches 1/4 of the V_{max} ? (5 marks)