JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST -1 EXAMINATION- 2026
M.Sc.-Ist Semester (Biotechnology)

COURSE CODE (CREDITS): 20MS1BT111 (3) **MAX. MARKS: 15**

COURSE NAME: BIOCHEMISTRY

COURSE INSTRUCTOR: Dr. JITENDRAA VASHISTT **MAX. TIME: 1 Hour**

Note: (a) All questions are compulsory. (b) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems. (c) Calculator is allowed for calculations.

Q. No.	Question	Marks
Q1	A group of amino acids are responsible for identification of proteins using spectrophotometer. Name these amino acids and explain the structural properties of these amino acids.	3
Q2	a) Explain the structural differences between saturated and non-saturated fatty acids. Also define their role in membrane flexibility. b) Which molecule is hydrophobic; a) Cholesterol, b) Cholesterol ester? Justify your answer with structural properties of each molecule.	3
Q3	If you want to purify the following protein/s which is the best design strategy for purification? Also you need to explain the principle of chromatography employed for purification. a) Three protein a, b and c with molecular weight of 20kDa, 60kDa and 90kDa, respectively. b) Cationic proteins	3
Q4	Explain the following in brief. a) Essential amino acids and non essential amino acids with respect to humans b) Endo-symbiotic theory	1.5X2=3
Q5	a) Explain the significance of buffer in an experiment with respect to biomolecules. Define the importance of pKa value and buffering capacity of a buffer. b) What will be the pH of sodium acetate buffer, if it contains 1M Acetic acid and 1M Sodium Acetate? Which equation/method will be employed to estimate the pH of resulting buffer? (Note: pKa of Acetic acid is 4.75)	1.5X2=3

JUIT EXAMINATION CELL

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