

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT  
**TEST -2 EXAMINATION- 2024**  
M.Sc.-I<sup>st</sup> Semester (Biotechnology and Microbiology)

COURSE CODE (CREDITS):20MS1BT111

MAX. MARKS: 25

COURSE NAME: Biochemistry

COURSE INSTRUCTOR: Dr. Jitendraa Vashistt

MAX. TIME: 1 Hour 30 Minutes

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

Q. No.	Question	Marks
Q1	a) Why some children can't digest milk or dairy products? Which biomolecules are responsible for this problem? b) Identify the molecule which is not a sugar, however, usually utilized as an artificial sugar. Define its major constituents.	3.0
Q2	If there is depletion in the glucose levels, a specialized biochemical process occur in cells for formation of glucose. a) Identify the biochemical event. b) Explain the three major biochemical events which can't be processed using the enzymes of glycolysis.	3.0
Q3.	Why you experience pain in muscles after vigorous exercise? Which biochemical event is responsible for this pain and how it gets rectified?	3.0
Q4.	'Although peptide bond is covalent, however it shows several peculiar properties, which makes it stronger as compared to other bonds present in a protein'. Justify this statement with structural features of peptide bond.	3.0
Q5.	A person consulted with a medical professional for a complaint of fatigue and muscle wasting. On examination by medical person it was diagnosed that the food and water content had some contaminants which hamper the major energy generating pathway of body. a) Identify the above mentioned energy generating pathway. b) Explain the biochemical event which block the energy generation.	3.0
Q6.	Design a protein purification strategy in which you need to get a single protein from a bacterial membrane fraction and the protein shows an immune response in a tested mice.	5.0
Q7.	How do you estimate the km for the enzymatic reaction in which the substrate concentration was 30μmol/L? The initial velocity for reaction was 3.0x10 <sup>-6</sup> μmol/L.min <sup>-1</sup> and the V <sub>max</sub> obtained 9.0x10 <sup>-3</sup> μmol/L.min <sup>-1</sup> ?	5.0