

19/11/2025  
12pm

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

Make-up Examination-Nov-2025

B.Tech-III Semester (BT/BI)

COURSE CODE (CREDITS):25B11BT313 (4)

MAX. MARKS: 25

COURSE NAME: Biochemistry

COURSE INSTRUCTORS: Jitendraa Vashistt

MAX. TIME: 1 Hour 30 Min

*Note: (a) All questions are compulsory. (b) The candidate is allowed to use calculator wherever required for solving problems*

Q.No.	Question	CO	Marks
Q1.	Explain the biochemical pathway of glycolysis and also explain the net ATP synthesis during the process. Justify your answer with calculating the number of ATP with expenditure and gain.	III	5
Q2.	Differentiate between the following with examples. a) Hydrophilic and Hydrophobic amino acids b) Competitive inhibition and non-competitive inhibition of enzymes	I, IV	2X2.5=5
Q3.	a) Explain the characteristics of Glucokinase enzyme which make it more suitable in glucose metabolism in liver than its another isoform. b) Why in general, enzymes of biochemical pathways are not active at extremes of pH and temperature?	III	2X2.5=5
Q4.	It has often been observed that leftover cooking oil is reused multiple times through reheating. What are the major adverse effects of reheating cooking oil, particularly in terms of structural changes? Additionally, explain the diseases associated with prolonged consumption of such oils.	II	5
Q5.	How do you calculate the Michaelis-Menten constant (MM) for the following enzymatic reaction $E + S \xrightleftharpoons[k_{-1}]{k_1} ES \xrightarrow{k_2} E + P$ <p>where E: Enzyme, S: Substrate and P is Product and <math>K_1</math> constant is <math>6 \times 10^8 \text{M}^{-1}\text{sec}^{-1}</math>, <math>K_{-1}</math> constant of reverse reaction is <math>8 \times 10^4 \text{M}^{-1}\text{sec}^{-1}</math> and, the <math>K_2</math> constant is <math>4 \times 10^3 \text{M}^{-1}\text{sec}^{-1}</math>.</p>	IV	5