JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -3 EXAMINATION- 2025

B.Tech-III Semester (BT/BI)

COURSE CODE (CREDITS):**25B11BT313 (4)** MAX. MARKS: **35**

COURSE NAME: **Biochemistry**

COURSE INSTRUCTOR: **Jitendraa Vashistt** MAX. TIME: 2 Hours

Note: *(a) All questions are compulsory.*

(b) The candidate is allowed to use calculator for solving numerical problems.

Q. No.	Question	CO	Marks
Q1	**a)** Which enzyme converts glucose to glucose-6-phosphate? **b)** What is the entry molecule for the TCA cycle? **c)** Which complex of electron transport chain is inhibited by cyanide? **d)** Which molecule transports fatty acids into mitochondria? **e)** How many ATP molecules are produced per NADH via oxidative phosphorylation?	**I**	**5**
Q2	**a)** How do you differentiate between oxidative phosphorylation and substrate level phosphorylation? Give example of each of the phenomenon with biochemical reaction involved. **b)** What will be the consequences at biochemical level in humans if arsenate is present in the food materials? Explain the condition with respect to TCA cycle.	**III**	**2.5X2=5**
Q3.	Differentiate between glycolysis and gluconeogenesis process. Also explain the three crucial steps and their alternate reactions by which glucose gets synthesized back from pyruvate.	**IV**	**5**
Q4.	How do you calculate the energy of a fatty acid after complete oxidation if this molecule has Carbon 16? Justify your answer by calculating in terms of ATP generation.	**II**	**5**
Q5.	Although, catabolism of amino acids produces a harmful molecule. However, an organ in human body has the ability to neutralize this molecule. Name the organ and also explain the metabolic process by which detoxification of the above mentioned molecule occurs in human body.	**III**	**5**
Q6.	Differentiate the following in brief **a)** Competitive inhibitor and Non- Competitive inhibitor **b)** Thymine and Thiamine	**IV**	**5**
Q7.	Calculate the following entities in an enzymatic reaction if you have Vmax=12X10^{-6} M min^{-1}, $[E]_T$=20 X10^{-9}M, Km= 30 X10^{-6} M **a)** Turnover number **b)** Catalytic efficiency	**IV**	**5**