

**JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT**  
**TEST -2 EXAMINATIONS-2022**

**B.Tech.-III Semester (Biotechnology)**

COURSE CODE (CREDITS): **18B11BT312 (3)**

MAX. MARKS: **25**

COURSE NAME: **Biochemistry**

COURSE INSTRUCTORS: **Dr. Jitendraa Vashistt**

MAX. TIME: **1 Hour 30 Minutes**

*Note: All questions are compulsory. Marks are indicated against each question in brackets.*

- Q1.** Normal cells and cancer cells can be differentiated in terms of genetic factors as well as their metabolic profiles. How do you differentiate between above mentioned cells on the basis of energy producing biochemical events? **(2.5 marks)(COV)**
- Q2.** Nicotinamide adenine dinucleotide is also energy providers in the biochemical reactions however, their region of generation is critical for their usage. What are tissue specific fates (aerobic & anaerobic) of NADH produced during glycolytic pathway? **(2.5 marks)(COIII)**
- Q3.** Due to the high substrate affinity of hexokinase enzyme, it shows saturation with high amount of glucose. It is evident that there are high levels of glucose influx in liver? How liver cells tackle the condition of enzymatic saturation? **(2.5 marks) (COIV)**
- Q4.** What are the biochemical consequences if the food or water is continuous contaminated with malonate and arsenate. **(2.5 marks) (COV)**
- Q5.** Design a strategy to purify/separate the proteins from a mixture of ten proteins in which four proteins are highly basic in nature and rest six are of acidic nature. Justify the usage of resin employed for the purification stationary phase. **(3.0 marks) (COII)**
- Q6.** Glycolysis and gluconeogenesis are majorly antagonistic in their final product as well as in the sequence of reactions. However, several reactions are not truly reversible.
- a) Define the biochemical reactions which get bypassed during gluconeogenesis and their associated enzymes. **(3.0 marks) (COIII)**
- b) What will happen if both cycles operate simultaneously in hepatocytes? **(3.0 marks) (COIV)**
- Q7.** The levels of oxaloacetate is usually limited in cells, however its optimum concentration is required for TCA cycle. Define the reactions by which the optimum concentrations of oxaloacetate as well as the precursors of TCA get achieved in cells? **(3.0 marks) (COIV)**
- Q8.** Some people consume raw eggs instead of boiled or other preparations. What will the biochemical consequences, if a person is on prolong usage of such kind of diet regimes? **(3.0 marks) (COV)**