

**JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT**  
**TEST -3 EXAMINATIONS- 2023**

**B.Tech-III<sup>rd</sup> Semester (BT)**

COURSE CODE (CREDITS):18B11BT312, 03

MAX. MARKS: 35

COURSE NAME: **Biochemistry**

COURSE INSTRUCTOR: **Dr. Jitendraa Vashistt**

MAX. TIME: 2 Hour

*Note: (a) All questions are compulsory. (b) Marks are indicated against each question in brackets. (c) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems*

- Q1.** How do you differentiate between purine and pyrimidine nucleotides? Which of the nucleotide is essentially present in RNA and how other nucleotides of the same group show the difference in their structures? **(4.0 marks)(COIII)**
- Q2.** Which molecule will provide more energy: 1 molecules of glucose or 1 molecule of palmitic acid after completion of complete oxidation? Justify your answer by calculating in terms of ATP generation. **(4.0 marks)(COIII)**
- Q3.** Why last step of Glycolysis can't be reverse back to synthesize glucose in Gluconeogenesis process? If it is so then how gluconeogenesis proceeded in formation of glucose using bypass reactions? **(4.0 marks) (COIV)**
- Q4.** What will be the potential medical condition occur if a person suffered by a form of arthritis in which needle-shaped crystals deposit in joints causing pain and swelling? Define a medical intervention and its biochemical mechanism to rectify the above mentioned medical problem. **(4.0 marks) (COV)**
- Q5.** What will happen at biochemical level in humans if arsenate molecules present in the drinking water? Explain the condition with respect to TCA cycle. **(4.0 marks) (COV)**
- Q6.** An X linked recessive inherited disorder in a child is associated with virtually complete deficiency of an enzyme involved in nucleotide metabolism. The clinical symptoms of the disorder are excess uric acid in urine often results in orange crystals in the diaper of affected children, self mutilation and severe mental retardation. Identify the disorder, biochemical reaction and its associated enzyme. **(5.0 marks) (COV)**
- Q7.** What is the fate in terms of energy generation in cells if malate-aspartate shuttle is not functional? Elucidate the above mentioned biochemical process with major constituents. **(5.0 marks) (COIII)**
- Q8.** Proteins metabolism is an essential energy generating component in humans, however there is a production of a deleterious molecule during the catabolism of amino acids. Define this molecule and also explain the metabolic process by which detoxification of the above mentioned molecule occurs in human body. Also state, if liver is not functional then how this process gets hampered? **(5.0 marks) (COV)**