

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT  
TEST -3 EXAMINATION- 2021

B.Tech. III<sup>rd</sup> Semester

COURSE CODE: 18B11BT312

MAX. MARKS: 35

COURSE NAME: BIOCHEMISTRY

COURSE CREDITS: 03

MAX. TIME: 2 Hours

*Note: There are three sections and all sections are compulsory Carrying of mobile phone during examinations will be treated as case of unfair means.*

**Section I (2X5 =10 marks)**

- Q1. Name two coenzymes which are required for dehydrogenation and decarboxylation of pyruvate to the acetyl CoA.
- Q2. Name two mechanisms by which NADH produced in the Glycolysis get transferred into the mitochondrial matrix.
- Q3. What are two locations in the human body, where glucose can be stored as glycogen for future use?
- Q4. Name two molecules which are potential inhibitor of TCA cycle and also name the enzymes which get inhibited by these inhibitors.
- Q5. How do you differentiate between "synthase" and "synthetase" enzyme?

**Section II (3X5 =15 marks)**

- Q6. What are the fates of Acetyl CoA a) if the energy state of an individual is low and b) if the energy state of an individual is high?
- Q7. Differentiate between the different enzyme isoforms which are responsible for glucose phosphorylation into glucose 6phosphate.
- Q8. What do you understand by the process of beta-oxidation of fatty acids? Why amount of ATP generation is much higher in fatty acid metabolism as compared to glucose metabolism. Justify your answer with suitable example.
- Q9. What will happen if a) ketone bodies are synthesized in body b) the concentration of glucose in the body gets lower down?
- Q10. Name the organelle of the cell which is involved in ATP generation and also explain the process by which energy gets generated in this organelle.

**Section III (5X2 =10 marks)**

- Q11. A 40 year old man awoke from sleep with a severe pain and swelling in his toes. Person was in usual state of health until in the last two days. During examination by doctor, patient admitted that he usually consume a meal of fried liver, protein, onions, and alcohol. On biochemical lab examination of synovial fluid, rod/needle like crystals was found and his serum uric acid level was also elevated at the level of 10.0 mg/dl.
  - a) Name the disease and biochemical pathway associated with this disease.
  - b) Name the drug which may be utilized for cure
  - c) Also mention the target enzyme and related biochemical.
- Q12. A gaseous molecule gets generated during the catabolism of amino acids and proteins, which is very harmful for human body. However, nature has provided us a mechanism by which this toxic gas get converted into less toxic excrete material.
  - a) Name the gaseous molecule, the process involved and its detoxified material.
  - b) Which organ is involved in the detoxification process and also explain the sequence of biochemical reactions at molecular/intracellular in this organ.