

Department of Biotechnology and Environmental Sciences
THAPAR INSTITUTE OF ENGINEERING AND TECHNOLOGY, PATIALA
(Deemed University)
End Semester Examination

13

Course No. BH-003

Date of Examination: 05.12.2006

Maximum Marks: 36

Course Name: Biochemistry

Session: 900 hrs- 1200 hrs

Instructions:

- Please read the questions carefully
- Write legibly & draw neat diagrams wherever necessary
- Attempt any 04 (four) questions in sequence only

- Q. No. 1 (a) Which is the molecule responsible for the transport of Acetyl CoA from Mitochondrion to the Cytoplasm and how? What is the fate of the transported Acetyl CoA to the Cytoplasm of the Cell? (04)
- (b) Explain why is Hexokinase replaced by Glucokinase in Liver for phosphorylation of the Glucose molecules formed in the Liver? (04)
- (c) Calculate the pH of a mixture of 9ml of 0.1mol/litre sodium acetate and 2ml of 0.1 mol/litre acetic acid? pK_a of acetic acid at $25^{\circ}C = 4.76$ (1.0)
- Q. No. 2 (a) Draw the detailed structure of Fo-F1 ATPase and explain the mechanism of ATP synthesis. (05)
- (b) Write short notes on (300-400words) : Any two of the following; (04)
(i) Proteasome (ii) NADH Oxidoreductase (iii) Phosphofructokinase (iv) GPCR (v) Biological importance of Buffers
- Q. No. 3 (a) What is substrate level Phosphorylation? Give a suitable example from the Glycolytic pathway? (01)
- (b) Discuss the mechanism of action of the hormone epinephrine in providing energy during the stress conditions. (04)
- (c) What are gluconeogenic amino acids? How are they associated with Citric acid cycle? (04)
- Q. No. 4 (a) What are GLU transporters? How are they Classified? Explain the role of different GLU transporters in glucose metabolism. (04)
- (b) Where does the conversion of pyruvate to Acetyl CoA occur? (0.25)
- (c) What are enzyme inhibitors? Give the uses of enzyme inhibitors? Differentiate between competitive and non-competitive enzyme inhibition giving suitable examples. (4.0)
- (d) In muscle the end product of Glycolysis is lactate. What is the fate of Lactate? Why does the physician recommend walking or lighter exercise after doing heavy exercise rather than going to a couch? (0.75)
- Q. No. 5 (a) Animal Cell and Fungi are both Eukaryotes. However acetate is not metabolized in the Animal Cell. Even Acetyl CoA is used in the synthesis of Oxaloacetate but moves out of the citric acid cycle. Explain what is the fate of surplus acetyl CoA in animals cell vis a vis in fungal cell? (04)
- (b) Draw a completely labeled self explanatory the Krebs – Hensilet Cycle. (03)
- (c) Electron transport Chain exists in Mitochondrion as well as Chloroplast. Give the major differences between both Electron transport Chains? (02)