

M.Sc. Examination, 2016
Semester-I
Biotechnology
Course – II
(Biomolecules, Enzymology and Metabolism)

Time: 3 Hours

Full Marks: 40

Questions are of value as indicated in the margin.

Answer ***any four*** questions.

1. Describe the steps of breakdown of a molecule of palmitoleate in the diet. 10
 2. (a) Describe the reaction catalyzed by adenine deaminase. Discuss the consequence of deficiencies of this enzyme. Comment on the possible treatment regimes using biotechnological approach.
(b) Describe briefly the different methods available for cell lysis with their respective suitability. 5×2=10
 3. Write short notes ***any four*** of the following: 2.5×4=10
 - (a) β -sheet
 - (b) Ramachandran plot
 - (c) Salvage pathway
 - (d) Ribonucleotide reductase
 - (e) Glucose-alanine cycle
 - (f) Standard free energy change of reaction
 4. (a) What do you mean by energy coupling and sequential reactions? Explain with an example.
(b) Calculate the standard free energy change for the isomerisation of glucose-6-phosphate to fructose-6-phosphate, if the equilibrium constant is 0.5 at 25⁰ C. Is this a favourable reaction under standard conditions?
(c) Discuss the different types of enzyme inhibitors and their role in enzyme kinetics. 2+(2+1)+5=10
 5. (a) Describe the regulation of TCA cycle.
(b) Describe the different complexes of ETC.
(c) Draw a schematic diagram of the ETC pathway. 5+3+2=10
 6. (a) Describe Urea cycle with its regulation.
(b) What is meant by phenylketonuria? 7+3=10
-