

Total No. of Questions : 08

M.Tech.(Bio Tech.) (Sem.-1)
BIOMOLECULES & BIOTECHNOLOGY
Subject Code : MTBT-103
Paper ID : [E0871]

Time : 3 Hrs.

Max. Marks : 100

INSTRUCTION TO CANDIDATES :

1. Attempt any FIVE questions out of EIGHT questions.
2. Each question carry TWENTY marks.

1. a) Give an account of common disaccharides with their biological importance. (8)
b) Predict the possible role of Gly, His and Cys residues in the proteins. (6)
c) dsDNA may assume various forms. Justify the statement. (6)
2. a) What are NTPs and dNTPs? Why are they energy-rich compounds? (6)
b) Give examples of isomerization and group transfer reactions. (6)
c) State any four biologically important half-reactions linked to mitochondrial ETC. (8)
3. a) Explain precisely the general features of signal transduction. (6)
b) Give a brief account of G-proteins and G protein-coupled receptors (GPCRs). (7)
c) Write a comprehensive note on signal transducing adaptor proteins. (7)
4. a) Illustrate the 3D structure and catalytic mechanism of Chymotrypsin. (8)
b) State the objectives and advantages of immobilized biocatalysts. (6)
c) Depict the mode of action of any two therapeutically important enzyme inhibitors. (6)
5. a) Elucidate the metabolic fates of pyruvate in living organisms. (8)
b) Depict the salient attributes of chylomicron. (5)

c) Write briefly on the following :

- Phenylketonuria and Lesch-Nyhan syndrome. (7)
6. a) Hormones act through specific cellular receptors. Illustrate with three examples. (6)
- b) Give an account of the target enzymes and metabolic effects of insulin secretion. (8)
- c) State the role of the allosteric enzymes in regulation of glycolytic pathway. (6)
7. a) What is your perception about conventional and modern biotechnology? (5)
- b) Correlate vast microbial genetic resources with biotechnological applications. (7)
- c) Write a comprehensive note on the current trend of plant biotechnology. (8)
8. a) Elaborate the aim and scope of environmental biotechnology. (6)
- b) Describe the pretreatment procedure of any four raw materials for industrial uses. (8)
- c) Comment on the safety and ethical aspects of biotechnology. (6)