1059
M.Sc. (Bio-Informatics) Second Semester
MBIN-8011: Metabolic Pathway Analysis

Time allowed: 3 Hours   Max. Marks: 60

NOTE: *Attempt <u>five</u> questions in all, including Question No. I which is compulsory and selecting atleast one question from each Unit.*

x-x-x

I.   Answer the following:-

   a)   What is the importance of TCA cycle?

   b)   Give characteristic features of metabolic pathways.

   c)   What is an allosteric inhibitor?

   d)   Explain 'rate-determining step' taking a suitable example.

   e)   What does EC number indicate? Explain taking a suitable example.

   f)   Give the full forms of KEGG and BRENDA.

   g)   Briefly explain feedback inhibition.

   h)   Differentiate between holoenzyme and coenzyme.   (8x1½)

UNIT – I

II.   a) Compare and contrast ethanol and lactic acid fermentation.

   b) Why is ATP a high energy molecule?   (6,6)

III.   a) Discuss regulation of glycolysis by phosphorfructokinase.

   b) Give the bioenergetics of breakdown of one glucose molecule in eukaryotes.

                                                      (6,6)

UNIT – II

IV.   a) Derive Michaelis Menten equation and define Km.

   b) State the transition state theory.   (8,4)

V.   a) Discuss regulation of the Aspartate transcarbamylase.

   b) Compare and contrast competitive, non-competitive and mixed inhibition.   (6,6)

UNIT – III

VI.   a) Discuss metabolic control analysis

b) Enlist the applications of metabolic flux analysis.   (8,4)

VII.   a) How are metabolic fluxes determined by Isotope labeling technique?

b) What are the applications of EcoCyc and MetaCyc databases?   (8,4)

x-x-x