2054

M.Sc. (Bio-Informatics) Second Semester

MBIN-8011: Metabolic Pathway Analysis

Time allowed: 3 Hours   Max. Marks: 60

NOTE: Attempt five 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)   Briefly explain any one mechanism of metabolic control.

   b)   What is oxidative phosphorylation?

   c)   What is a holoenzyme?

   d)   Define metabolic flux.

   e)   What are coenzymes?

   f)   What information is contained in EC number?   (6x2)

UNIT - I

II.   a) What are the characteristics of metabolic pathways?

   b) Differentiate between the two types of fermentation based on end products.   (6+6)

III.   a) Why is ATP a high energy compound?

   b) Discuss the enzymatic reactions involved in breakdown of glycogen.   (6+6)

UNIT - II

IV.   a) Define Michaelis Menten equation and define K_m.

   b) Discuss allosteric regulation of enzyme activity taking suitable example.   (8+4)

V.   a) State the transition state theory.   (4)

   b) Differentiate between the following:-

      i) Competitive inhibition and non-competitive inhibition

      ii) Feedback inhibition and mixed inhibition   (2x4)

P.T.O.

UNIT - III

VI. a) Discuss any one method of experimental determination of metabolic flux.

b) Name any two enzyme databases and give their applications. (6+6)

VII. a) What are applications of metabolic flux analysis?

b) Discuss features of KEGG as a bioinformatics resource. (6+6)

x-x-x