

2055

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) What is metabolic control?
- b) Why is ATP a high energy compound?
- c) Define K_m .
- d) Differentiate between holozyme and apozyme.
- e) Give the full form of KEGG.
- f) What is the importance of EC number?
- g) Give the applications of BRENDA.
- h) What are the applications of metabolic flux analysis? (8x1½)

UNIT - I

- II. a) Discuss the points/reactions that are involved in regulation of glycolysis.
- b) Differentiate between lactic acid and alcoholic fermentation. (8+4)
- III. a) Explain the steps of glycogen breakdown and its regulation.
- b) What are the characteristics of metabolic pathways? (8+4)

UNIT - II

- IV. a) Derive Michaelis Menten equation and define K_m & V_{max} .
- b) Briefly explain transition state theory. (8+4)
- V. Write notes on the following:-
 - a) Non-competitive inhibition and its importance
 - b) Regulation of Asp. Trans carbamylase (6+6)

(2)

UNIT - III

- VI. a) Explain isotope labelling method for experimental determination of metabolic fluxes.
b) Discuss application of bioinformatics to metabolic engineering. (6+6)
- VII. Write notes on the following:-
a) Ecocyc.
b) Application of metabolic flux analysis (6+6)

x-x-x