

**M.Sc. Bio-Informatics - 3rd Sem.**

(2118)

**Paper: BI-633****System Biology & Metabolic Pathway Engg.****Time allowed: 3 hrs.****Max. Marks: 75****Section A**

Section A is compulsory.

- 1) Explain the following in not more than four lines 1.5X10 = 15
- EcoCyc
  - LIGAND
  - Feedback inhibition
  - KEGG
  - Virtual erythrocyte
  - E-cell
  - Lambda Phage
  - Bioreactor
  - Modular design
  - Chemotactic cell

**Section B**

Answer one question from each unit

15X4 = 60

**Unit 1**

- 2) What do you understand by robustness and redundancy of a model? Discuss their importance in system biology.
- 3) Discuss rapid pole to pole oscillations in *E. coli*.

**Unit 2**

- 4) Explain Michaelis-Menton kinetics and its application in system biology.
- 5) Discuss modeling of *E. coli* chemotaxis.

**Unit 3**

- 6) What is whole cell simulation? Discuss its concept and significance.
- 7) Explain quorum sensing? Discuss its significance.

**Unit 4**

- 8) What is metabolic pathway engineering? Discuss its application.
- 9) Discuss any database of compound or reaction and explain its significance.

\*\*\*\*\*

**2453(2118)100**