CUD-3/ 9/12/2023 (morning)

Exam.Code:0441
Sub. Code: 3504

2123

M.Sc. (Bio-Informatics) Third Semester

MBIN-8012: Elements of System Biology

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) Compare and contrast Robustness and Redundancy.

b) What is the importance of modular design?

c) Give application of Math ML.

d) What are Petri Nets?

e) Briefly explain the concept of single gene regulatory circuit?

f) Enlist applications of human erythrocyte model? (6x2)

UNIT - I

II. a) Discuss purpose and adequateness of model taking suitable example.

b) Explain the process of model development. (6,6)

III. a) What are the advantages of computational modeling?

b) Compare and contrast variable, parameter and constants. (8,4)

UNIT - II

IV. a) What is genetic programming and its importance?

b) Discuss SBML and its applications. (6,6)

V. Write notes on the following:-

a) V-cell

b) System biology workbench (6,6)

P.T.O.

UNIT - III

VI. a) Discuss Endo 16 cis regulatory circuit.

b) How is *Mycoplasm genitalium* used as a virtual cell? (8,4)

VII. a) Explain lambda phage lysogany and lysis model.

b) Discuss toogle switch giving suitable examples. (8,4)

x-x-x