Exam.Code:0441
Sub. Code: 3504

2012

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. 1 which is compulsory and selecting atleast one question from each Unit.*

x-x-x

I. Answer the following:-

a) Differentiate between steady state and variable.

b) Briefly explain PyBIOS.

c) Give the applications of MathML.

d) Differentiate between parameter and constant.

e) What are single regulatory circuits?

f) What is SBW and give a suitable example?

g) What are genetic circuits and why are they modeled?

h) What defines the adequateness of a model? (8x1½)

UNIT - I

II. Write notes on the following giving suitable examples from biological systems:-

a) Control

b) Redundancy

c) Robustness (3x4)

III. a) What is modular design and its importance?

b) Enlist the advantages of computational modeling. (2x6)

UNIT - II

IV. a) What is genetic programming and how is it used in modelling a biological system?

b) Write a note on SBML. (2x6)

V. a) How are biological systems modelled and visualized in V-cell?

b) Briefly explain the concept of Petri Nets. (8,4)

P.T.O.

UNIT - III

VI. a) Discuss Endo16 cis regulatory system of Sea Urchin.

b) Explain toggle switch giving a suitable example. (8,4)

VII. Write notes on the following:-

a) Human erythrocyte model and its applications

b) Lambda phage lysogenic-lysis model (2x6)

x-x-x