Exam.Code:0441
Sub. Code: 3504

1129

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 briefly:-

a) Petri Nets

b) Lambda phage

c) Steady State

d) MathML

e) Systems biology

f) Modular design

g) Modeling

h) Lysogeny (8x1½)

UNIT – I

II. a) Discuss the need for system level understanding of biological systems.

b) Differentiate between variable, parameters and constants. (7,5)

III. a) List the properties of system biology models.

b) What is the role and significance of robustness and redundancy in biological systems? (2x6)

UNIT – II

IV. a) Discuss the significance of System Biology Mark Up Language.

b) Explain two tools used for visualization in systems biology. (2x6)

V. Write notes on:-

a) E cell
b) Gepasi
c) Genetic Programming (3x4)

P.T.O.

UNIT – III

VI. a) How are toggle switches used in genetic circuits?

b) Discuss the single gene regulatory circuits with reference to Lambda phage lysogeny-lysis model. (4,8)

VII. Write a note on *Mycoplasma genitalium* as a model virtual cell. (12)

x-x-x