Exam.Code:0441
Sub. Code: 3504

1127

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

Q1 Answer briefly:

a) Redundancy

b) Cell designer

c) Modular design

d) Variables

e) Computational modeling

f) What is STOCKS2?

g) Explain MATHML.

h) SBW (1.5X8=12)

Unit I

Q2 a) Describe the aspects of biological systems and corresponding models in systems biology. (6)

b) Explain the significance of modular design and model assignment in Systems biology. (6)

Q3 a) Describe the properties of models. (6)

b) Write a note on the system level understanding of biological systems. (6)

Unit II

Q4 a) Write a note on modeling tools. Mention two tools used for visualization. (6)

b) What was the need for the development of SBML? Explain its features. (6)

Q5 a) Write short notes on:

1) Gepasi 2) E-cell (8)

b) Explain the use of genetic programming in systems biology. (4)

Unit III

Q6 Write a note on the Human erythrocyte model and its applications. (12)

Q7 a) Discuss the applications of Toggle switches in systems biology. (6)

b) Why was Endo-16 chosen for studying the activity of single gene regulation? (6)

x-x-x