Exam.Code:0441
Sub. Code: 3504

2021

M.Sc. (Bio-Informatics) Third Semester

MBIN-8012: Elements of System Biology

Time allowed: 3 Hours

Max. Marks: 60

***NOTE**: Attempt <u>five</u> 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) PyBIOS

b) Constants

c) Toggle switches

d) MathML

e) Virtual Cell

f) Robustness

g) *Mycoplasma genitalium*

h) Lyctic cycle (8x1½)

UNIT – I

II. a) Write a note on the modular design and model assignment in System Biology.

b) Differentiate between steady state and variable state. (7,5)

III. a) List the advantages of computational modeling.

b) What is the role and significance of purpose and adequateness of models in systems biology? (2x6)

UNIT – II

IV. a) Discuss the significance of genetic programming in Systems Biology.

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

V. a) Write a note on SBML and its applications.

b) Discuss MathML. (7,5)

UNIT – III

VI. a) What is the basis and applications of Genetic circuits?

b) Discuss the Endo l6 cis-regulatory system of sea urchins. (4,8)

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

x-x-x