M. SC. BIOINFORMATICS SEM.-III (2013 COURSE) (CHOICE BASED CREDIT SYSTEMS) : SUMMER - 2018
SUBJECT : SYSTEMS BIOLOGY

Day	:	**Wednesday**	Time :	**02.00 PM TO 05.00 PM**
Date	:	**11/04/2018** **S-2018-1133**	Max. Marks :	60

N. B. :

1) **Q. No. 1** and **Q. No. 5** are **COMPULSORY**. Out of remaining attempt **ANY TWO** questions from each section.
2) Figures to the right indicate **FULL** marks.
3) Answers to both the sections should be written in **SEPARATE** answer books.

SECTION – I

Q. 1   Define :   (10)

   a) Modeling constraints
   b) Stability
   c) Stiffness
   d) Formulations
   e) Calibrations

Q. 2   Write short notes on: (10)

   a) Qualitative modeling.

   b) Quantitative modeling.

Q. 3   Answer the following: (10)

   a) Explain interaction modeling.

   b) What are discrete models? Explain with example.

Q. 4   Write in detail numerical differentiation.   (10)

OR

Discuss numerical integration, regression and non-linear equations in brief.

SECTION – II

Q. 5   Explain in detail on model validation techniques.   (10)

OR

How implementation of modes in real space does occur? Give an overview on dynamic validation.

Q. 6   Write short notes on: (10)

   a) Complexity and robustness analysis

   b) Machine learning based modeling techniques

Q. 7   Answer the following: (10)

   a) Discuss about modularity based studies.

   b) What is system level validation?

Q. 8   Describe discrimination models in detail.   (10)

OR

Discuss in detail predator – prey model.

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