

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- October 2017

B.Tech (Bioinformatics) VIIth Semester and PhD

COURSE CODE: 14B1WBI732

MAX. MARKS: 25

COURSE NAME: Computational Systems Biology

COURSE CREDITS: 3

MAX. TIME: 1.5 Hrs

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.

Q.1. How random networks are different from real networks? Discuss ER model for random networks through an example by keeping degree distribution same. [4]

Q.2. Discuss the role of FFL in a bacterial system with suitable example of real systems in bacteria and their specific functional role. [2]

Q.3. How we measure the rate of production of protein? Discuss the input function for activator and repressor. [4]

Q.4. What are various families of network motifs? Discuss each with an example. [4]

Q.5. What are various computational and statistical parameters for network motifs identification and analysis. Discuss the computation of significance profile for a biological motif set. [3]

Q.6. Explain each with an example:

(a) GRN and their association with TFs

(b) System and its properties

(c) Omics cascade

(d) Bound activator and bound repressor [1.5*4=6]

Q.7. Discuss how the evolution of a network can be associated with network existence. [2]