

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST -2 EXAMINATION, OCTOBER 2018

B.Tech (BT and BI) VII Semester

Dr. Tiwari Raj

Course Code: 14B1WBI732

MAX. MARKS: 25

Course Name: Computational Systems Biology

Course Credits: 03

MAX. TIME: 1.5 Hr

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

Q.1. Explain the following with an example of each:

[CO: 1-4] (1X10=10Marks)

- Traversal challenges of biological networks.
- Level of abstraction in TRNs.
- Composite and Complex networks.
- I1-FFLs.
- Network motifs in biological networks.
- Hill function for activator.
- Real and Random networks.
- ER-model of networks.
- Reductionist approach.
- GAL Regulon.

Q.2. Describe all families of network motifs with an application of each family.

[CO: 2,3] (4 Marks)

Q.3. For the given specifications generate random networks. $N=10$, $E=12$, $N_{\text{self}}=2$. Provide necessary computations for the probability values.

[CO: 2, 3] (5 Marks)

Q.4. Discuss how network's evolution could be influenced by network motifs? Justify your answer with a real organismal data.

[CO: 2,3] (3 Marks)

Q.5. Explain the processing of bound activator and bound repressor in a transcriptional network.

[CO: 1] (3 Marks)