JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST – 1 EXAMINATION, SEPTEMBER 2016

B.TECH VII SEMESTER

COURSE CODE: 14B1WBI732   MAX. MARKS: 15

COURSE NAME: Computational Systems Biology

COURSE CREDITS: 03   MAX. TIME: 1 HRS

Note: *All questions are compulsory. Carrying of mobile phone during examination will be treated as case of unfair means. Make your own assumptions, if required.*

Q.1. Differentiate between integrative and reductionist approaches with respect to the development of Bioinformatics and Systems Biology fields. How these are associated with components and systems?   [3]

Q.2. Write gene regulatory dynamics through a mathematical model. Discuss about Hill function for GRN.   [3]

Q.3. Define system and networks along with their respective crucial properties.   [2]

Q.4. Explain hierarchy of TRN. Explain –omics cascade with an example.   [2]

Q.5. What features do each of the six types of signal transduction schemes have in common and what aspects are different?   [2]

Q.6. What are the three different approaches of signaling network reconstruction?   [2]

Q.7. In the following reaction, write the ODEs of $G_{\alpha\beta\gamma}$ and $G_{\alpha}GTP$.   [1]