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JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST-1 EXAMINATION- September -2017

B. Tech (7th Semester BT/BI) and PhD

COURSE CODE: 14B1WBI732

MAX. MARKS: 15

COURSE NAME: Computational Systems Biology

MAX. TIME: 1 HR

COURSE CREDITS: 03

Note: All questions are compulsory. Carrying of mobile phone during examination will be treated as case of unfair means. Marks are indicated below each question

1. Define following features of GRN's with a suitable example:

(a) Robustness (b) Modularity (c) Timeline [3]

2. Elaborate the genotype to phenotype movement with a question of interest to be asked at each level. [1]

3. How you correlate the biological system with a physical system? Justify your views with an example. [1]

4. Provide a detailed analysis of GRN's in lower and higher organisms. Discuss the hierarchy of TRN's with role of each entity. [3+1=4]

5. Define chemotaxis and pictorially draw the chemotaxis pathway as observed in E. coli. [1.5]

6. List and explain 6 general types of signal transducers and give appropriate example of the pathway they are involved in. [3]

7. For the following reaction write the rate of change of GTP_{Ras} and GDP_{Ras} as ODEs. [1.5]

