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JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
T2 EXAMINATION-APRIL 2018
B.Tech (BT/BI) VIII Semester

COURSE CODE: 15B1WBI834

MAX.MARKS: 25

COURSE NAME: Computational Molecular Evolution

MAX. TIME: 1.30 Hrs

COURSE CREDITS: 3

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

1. Discuss and derive Kimura's two parameter model for nucleotide substitutions. [5]

(CO-1)

2. How you compute amino acid replacements between two proteins? [2]

(CO-2)

3. Explain the process of gene duplication and provided computational estimate to date this event. [4]

(CO-2)

4. Explain following terms *w.r.t.* molecular evolution: [4]

(a) Selection coefficient

(b) Fitness coefficient

(c) Pseudogenes

(d) Transposons

(CO-1,3)

5. Discuss early and late theories for introns evolution with an example of each. [4]

(CO-3)

6. Discuss the process of evolution through various kind of selection measures. How conservation and variability plays crucial role in the evolution of proteins? [4]

(CO-3)

7. Discuss Consurf and Selecton methods and their respective utility in molecular evolution. [2]

(CO-3)