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JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST -2 EXAMINATIONS April 2019

B.Tech VIII Semester (BT and BI branches)

Course Code: 15B1WBI834

Course Name: Computational Molecular Evolution

Course Credits: 03

MAX. MARKS: 25

MAX. TIME: 1.5 hrs

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

Q1. Define Kimura's two parameter model for nucleotide substitutions for studying evolution along with its derivation. (CO3) [5]

Q2. What is codon usage bias in protein coding genes? Define Codon Adaptive Index (CAI) for the codon usage. (CO2, 3) [4]

Q3. Explain the evolution of human in your scientific opinion. (CO1-4) [2]

Q4. Define introns evolutionary theories and their significance. (CO2, 3) [3]

Q5. What is gene duplication? How gene duplication is associated with functional aspects of gene? How you date gene duplication in any species? (CO2-4) [4]

Q.6. Define following terms:

(a) Genetic drift (b) Selection (c) Gene loss (CO1-4) [1*3=3]

Q.7. Differentiate between the following:

(a) Homology and Homoplasy (b) Orthologs and Paralogs (CO1-4) [2*2=4]