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JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST -3 EXAMINATIONS, May 2019

PhD II Semester (BT and BI)

Course Code: 18M1WBT233

MAX. MARKS: 35

Course Name: Advances in Computational Molecular Evolution

Course Credits: 03

MAX. TIME: 2 Hrs.

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means. Marks are indicated in square brackets against each question.

Q.1. Differentiate between Kimura's and Jukes and Cantor's models for to study evolution for two nucleotide sequences. (CO 1-4) [5]

Q.2. Define and derive non-functionalization time model. (CO 3-4) [5]

Q.3. What are nested genes? What is the significance of nested genes in genomes and evolution? What is their relation with overlapping genes? (CO 4-5) [5]

Q.4. What is exon shuffling? How it is associated with proteins function and evolution. Explain various classes of exon shuffling. (CO 4-5) [5]

Q.5. Define following terms/theories with a suitable example: (CO 1-5) [2*5=10]

(a) Gene duplication (b) Natural selection (c) Neo-Darwinism

(d) Intron theories (e) Gene dynamics

Q.6. Explain following in the light of evolution:

(a) Mutations (b) Gene rearrangements (c) Purifying selection (d) GLOOM Server

(e) Selecton Server (CO 1-5) [1*5=5]