

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATIONS-2022

B.Tech-VIII Semester (BI)

COURSE CODE: 18B1WBI831

MAX. MARKS: 25

COURSE NAME: Computational Molecular Evolution

COURSE CREDITS: 3

MAX. TIME: 1 Hour 30 Min

---

*Note: All questions are compulsory. Marks are indicated against each question in square brackets.*

---

Q1. Evaluate the comparative performance of one and two parameter models for the nucleotide sequences substitutions. What are the biological parameters that make actual differences in these two models. Give derivation of any one of these two models. (CO-2) [6]

Q.2. How you evaluate the conservation in biological sequences? Which type of sequences would be a better option for conservation while exploring functional aspects? What are various tools available for conservation analysis? Discuss their specific roles at sequence and structure level conservations respectively. (CO-2,3) [5]

Q.3. What do you mean by the rate of evolution. Explain it with a real example. (CO-1,2) [3]

Q.4. Discuss the genetic code evolution. Also evaluate the performance of genomic sequences in term of evolution while considering CODON based models. (CO-2,3) [4]

Q.5. Realize the importance of introns in the process of evolution. Discuss theories of introns evolution. (CO-4) [4]

Q.6. A task of comparing two amino acid sequences was given to you. If amino acid differences between these sequences were 46 and length of each sequence was 456 residues. After the alignment, the aligned length observed was 442. What will be the observed proportion of different amino acids in these two sequences?. (CO-4) [3]