

**APJ Abdul Kalam Technological University**  
**SEVENTH SEMESTER BTECH DEGREE (HONS.) EXAM DEC 19**

Course code: 02CS7111.5

Course Name: BIOINFORMATICS

Time: 3 Hrs

Max. Marks: 60

**Instructions:** *Answer All Questions from Part A.*

*Answer Two Full questions from Part B.*

**PART A**

(Answer All Questions)

1. (a) Draw the "central dogma" of molecular biology, complete with labels that indicate the portions that correspond to transcription and translation and indicate what enzymes are responsible for those important steps. (4)
- (b) Obtain the optimal global alignment for strings APPLE and HAPPEN under the match premium +1 and mismatch and indel penalty -1. (5)
2. Define distance-based phylogeny problem. Write UPGMA algorithm and compare with Neighbour-Joining approach. (9)
3. (a) List out any three disadvantages of Perl programming language. (3)
- (b) How arrays are represented in Perl? Explain any four array operations in Perl with one example each. (6)
4. What do you mean by biological pathways? Discuss the different types of biological pathways. (9)

**(4 x 9=36)**

**PART B**

5. Explain the existing data mining tools for various bio data analysis. (12)
6. With a neat diagram, describe the basic simulation and modelling process. (12)
7. (a) Write short notes on the following:
  - (i) Distance-Based Clustering
  - (ii) Hierarchical Clustering (6)
- (b) Write short notes on the application of modeling and simulation in bioinformatics. (6)

**(2 x 12=24)**