M.Tech. (Bio Tech)   (Sem.–3)
COMPUTATIONAL BIOLOGY
Subject Code : MTBT-305/18
M.Code : 76765
Date of Examination : 12-12-22

Time : 3 Hrs.   **Max. Marks : 60**

INSTRUCTIONS TO CANDIDATES :
1. Attempt any FIVE questions out of EIGHT questions.
2. Each question carries TWELVE marks.

1. a) What is an algorithm? Discuss with an example.

   b) Discuss two of the major problem solving technique in algorithm.

2. Mention the steps of algorithm design. Write a simple Perl program to introduce yourself maximum in five lines.

3. Write important differences among variable, array and hashes with example in Perl.

4. Discuss recent machine learning algorithms and their applications in solving biological problems.

5. a) Define Markov chain and Hidden Markov modes.

   b) Discuss the application of HMM in remote homology sequence searches.

6. a) What do you understand by Biological databases?

   b) With example explain primary and secondary databases of protein structures.

7. a) Discuss string manipulation and file handling.

   b) Write a Perl program to open, read and write in a file.

8. Define the following terms :

   a) Mutation   d) Pattern matching

   b) Testing and debugging   e) Hashes in Perl

   c) SVM and ANN   f) Bioinformatics.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.