

Total number of printed pages – 4

B. Tech
PEBT 8301/CPBT 8309

Sixth Semester Examination – 2007

BIOINFORMATICS

Full Marks – 70

Time : 3 Hours

*Answer Question No. 1 which is compulsory and any **five** from the rest.*

The figures in the right hand margin indicate full marks for the questions.

1. Answer the following questions : 2×10
 - (i) What is NBR-PIR ? It contains which kind of data ?
 - (ii) Expand NCBI. Which is the nucleotide sequence database of NCBI ?

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- (iii) KEGG database contains information about which data. Expand KEGG.
- (iv) What is MSDN ? How is MSDN useful in making biological studies ?
- (v) What is the full form of EMBL and it shares data with which 2 other databases ?
- (vi) BLAST is a tool used for which in silico activity ? Which algorithm is followed by BLAST ?
- (vii) What is FASTA format ? Give an example of nucleotide sequence in FASTA format.
- (viii) What is sequence analysis ? Name 2 extensively used sequence analysis tools.
- (ix) What is Flat file ? Is the flat file of Genbank different from that of EMBL ?
- (x) Define 'Data banks'. Which are the popularly used structure databases ?

- 2. What are Sequence data banks ? Discuss Genbank sequence database in detail. 10
- 3. Which are the algorithms available for Pairwise sequence alignment ? Note down the difference between Needleman and Wunsch & Smith Waterman algorithms. 10
- 4. Expand BLAST. Brief the algorithm followed by BLAST to perform an alignment search. 10
- 5. Apply Needleman and Wunsch algorithm to the following sequences provided and find the possible alignment (s) between the 2 sequences. [Assume that the score for gap penalty = 0, Match = 1, Mismatch = 0]. 10
 Seq # 1 G A A T T C A G T T A
 Seq # 2 G G A T C G A
- 6. What is in-silico secondary structure prediction ? Discuss Chao-Fasman algorithm for protein secondary structure prediction. 10

7. Write short notes on the following : 5×2

(i) Hidden Markov Model

(ii) Neural Networking.

8. Write short notes on the following : 5×2

(i) Comparative modelling in silico

(ii) Drug Designing.