

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 NBRF-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.

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