[Time: 2:30 Hours]   **[Marks:60]**

Please check whether you have got the right question paper.

N.B: 1) **All** questions are **compulsory**.
         2) **Figures** to the **right** indicates **full** marks.
         3) Draw neat and labelled diagrams wherever necessary.

Q.1 **Any 3 Out of 5 (5M Each)**

1. Briefly write about INSDC.
2. Write a note on Genbank and the submission tool in Genbank, EMBE and DDBJ.
3. Explain the significance of the online biological database.
4. Write a brief note on Protein Sequence Database.
5. Comment on the various literature databases available online.

Q.2 **Any 3 Out of 5 (5M Each)**

1. Differentiate between PAM and BLOSUM matrix.
2. Demonstrate with example: Homologues, Orthologues and Paralogues.
3. What is the difference between the Sequence homology and sequence similarity.
4. Write a note on BLOSUM Matrix.
5. Explain Dot plot matrix.

Q.3 **Any 3 Out of 5 (5M Each)**

1. Explain Needleman and Wunsch algorithm.
2. Why there is a need for Sequence comparison and Sequence alignment.
3. Write a note on Pairwise alignment and its types.
4. Describe Smith-Waterman algorithm.
5. Briefly explain Interpretation of the result of the analysis of the alignment.

Q.4 **Any 3 Out of 5 (5M Each)**

1. Explain the process of translation in brief.
2. Explain the process of DNA replication in brief.
3. Briefly write about the Dayhoff Point Accepted Mutation matrices.
4. How sequence alignment plays an important role in bioinformatics.
5. Write a note on Domain Database.

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