

**RAN-2103001106020002****B.Sc. Biotechnology (Sem. - VI) Examination September - 2025****BT-18: Introduction to Bioinformatics****Time: 2 Hours]****[Total Marks: 50****સૂચના : / Instructions**

(1)

નીચે દર્શાવેલ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fill up strictly the details of signs on your answer book

Name of the Examination:

B.Sc. Biotechnology (Sem. - VI)

Name of the Subject :

BT-18: Introduction to Bioinformatics
Subject Code No.: **2103001106020002**

Seat No.:

Student's Signature

2. Figures to the right indicate full marks.
3. Draw neat and labelled diagrams wherever necessary.

Q.1 Give Specific Answer (Any Four):**(08)**

- a) Define: Genomics.
- b) What is the primary aim of bioinformatics?
- c) List any two protein sequence databases.
- d) State the purpose of a gap penalty in sequence alignment.
- e) Define BLAST and FASTA.
- f) State the full forms of CATH and KEGG.

Q. 2 Attempt Any Two:**(14)**

- A. Explain the different branches of bioinformatics with examples.
- B. Discuss about protein structure databases.
- C. Explain the purpose of SCOP and CATH in protein classification.

Q.3 Explain in detail Any Two:**(14)**

- A. How can the Needleman-Wunsch algorithm be applied to DNA or protein sequence alignment?

- B. Explain the role of gap penalties in sequence alignment.
- C. Explain the purpose of PubMed in biomedical research.

Q.4 Write Short note (Any Two): (14)

- A. Explain working of Dot Plot method.
 - B. Explain the principle behind the Sum of Pairs (SP) method in multiple sequence alignment.
 - C. What does BLAST stand for? Explain how BLAST works for sequence alignment.
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