

**SEMESTER EXAMINATION-2021**  
**CLASS – B.Sc. (Hons) Biomedical Science-V**  
**SUBJECT: Computational Biology and Drug Design**  
**PAPER CODE: BMS-E501**

**Time: 3 hours**

**Max. Marks: 70**

**Min. Pass: 40%**

**Note:** Question Paper is divided into two sections: **A and B**. Attempt both the sections as per given instructions.

**SECTION-A (SHORT ANSWER TYPE QUESTIONS)**

**Instructions:** Answer any five questions in about 150 words each. Each (5 X 6 = 30 Marks) question carries six marks.

Question-1. What do you understand by the following terms: Bioinformatics and Cheminformatics?

Question-2. Discuss in brief about biological databases and their classification.

Question-3. Write the full forms of the following NCBI, DDBJ, EMBL, ENSEMBL, UCSC

Question-4. Give a brief introduction to linux and common terminal commands used in computational biology

Question-5. Discuss the use of biological databases and genome browsers in laboratories.

Question-6. What do you mean by BLAST and how to use BLAST to align two sequences without a database search?

Question-7. What is meant by s-value and e-value? How the alignment score is calculated.

Question-8. Define the term virtual screening. Explain the different types of virtual screening techniques with examples

Question-9. Discuss the Lipinski's rule of five.

Question-10. Describe the concept of rational drug design using example.

**SECTION-B (LONG ANSWER TYPE QUESTIONS)**

**Instructions:** Answer any FOUR questions in detail. Each question (4 X 10 = 40 Marks) carries 10 marks.

Question-11. What is the concept behind the energy minimization Explain different methods in determination of energy minimization?

Question-12. What do you mean by microarray and discuss the principle and applications of protein micro-array?

Question-13. Discuss the various stages of drug discovery and development.

Question-14. Write a detailed note on problems faced during drug discovery.

Question-15. Define the terms molecular descriptors and topological descriptors.

Question-16. Write a note on quantitative structure-property relationships.

Question-17. What is HTS in Drug discovery and why is it necessary?

Question-18. Write a detailed note on Phylogenetic analysis.

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