

School of Biological and Life sciences

Department of Biological and Life Sciences

Mid Term Examination

Exam Date: 01 Oct. 2023

Time : 90 Minutes

Marks : 50

Sem III - MSDB6019 - Computational Biology

Your answer should be specific to the question asked

Draw neat labeled diagrams wherever necessary

- 1) Name the algorithm used in Local Alignment and Global Alignment. K2 (2)
- 2) Differentiate between the two algorithms used in alignment. K1 (3)
- 3) Elaborate on the significance of the PDB (Protein Data Bank) in the field of structural biology. How does the PDB store and provide access to 3D structures of biological macromolecules? K2 (4)
- 4) Discuss the potential benefits and challenges of using AI in bioinformatics research and drug discovery. K2 (6)
- 5) How do micro RNAs regulate gene expression within cells? K3 (6)
- 6) Which database focuses on information about small molecules and their biological activities? K3 (9)
- 7) Elaborate on the significance of multiple sequence alignments in bioinformatics. Explain the algorithms used for multiple sequence alignment and how they help in identifying conserved regions and functional motifs in related sequences. K4 (8)
- 8) Describe the significance of OMIM (Online Mendelian Inheritance in Man) database in understanding human genetic diseases. Provide examples of how this database has contributed to medical research. K4 (12)

OR

Explain the principles and applications of Microarray technology in gene expression profiling. How has it revolutionized our understanding of complex biological processes? K4 (12)