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School of Biological and Life sciences

Master of Science in Zoology
Mid Term Examination - May 2024

Duration : 90 Minutes
Max Marks : 50

Sem II - P1PN207B - Computational Biology and BioinformaticsGeneral Instructions

Answer to the specific question asked

Draw neat, labelled diagrams wherever necessary

Approved data hand books are allowed subject to verification by the Invigilator

- 1) Name the algorithm used in Local Alignment and Global Alignment. K2 (2)
- 2) Differentiate between PSA and MSA 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 microRNAs 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)