



Avinashilingam Institute for Home Science and Higher Education for Women

Deemed to be University Estd. u/s 3 of UGC Act 1956, Category A by MHRD (now MoE)

Re-accredited with A++ Grade by NAAC. CGPA 3.65/4, Category I by UGC

Coimbatore - 641 043, Tamil Nadu, India

Master's Degree Examination – May 2025

II Semester

Class : I P.G.
Major : Biotechnology

Time: 3 Hours
Max. Marks: 100

23MBTC09 Bioinformatics

Course Outcomes:

CO1: Explain the contents and layout of the important biological databases and to search & retrieve sequence and structural data using text-based and sequence-based search tools

CO2: Apply bioinformatics tools for sequence alignment and to find the evolutionary relationships.

CO3: Explain the theory behind the gene-finding tools, different types of genomics and proteomics and other major applications.

CO4: Understand the steps involved in the analysis of structures in biomolecules and predicting their secondary and tertiary structures with various bioinformatics tools.

CO5: Develop a protein model/design a drug and predict its structure and function with various tools.

Part A

10 x 1 = 10

Choose the Correct Answer

- Which of the following is an example of Homology and similarity tool? CO1K1
a. CASR b. QSAR c. Pymol d. BLAST
- Which of the following scientists created the first Bioinformatics database? CO1K2
a. Dayhoff b. Rideu c. Lester d. Mendel
- The human genome contains approximately _____ billion base pairs. CO2K2
a. 10 b. 50 c. 3 d. 20
- Which of the following tools is used for the identification of motifs? CO3K3
a. COPIA b. EEZ c. QSAR d. T-MET
- The identification of drugs through the _____ study is called pharmacogenomics. CO1K2
a. drug b. toxin c. genomics d. doctor
- Which of the following compounds has desirable properties to become a drug? CO5K2
a. Zinc b. Iron c. Lead d. Mica
- The laboratory work using computers and associated with web-based analysis generally online is referred to as CO3K3
a. in silico b. wet c. dry d. Dynamic lab
- Which of the following belongs to model organism database? CO2K2
a. Dryzone b. T-MET c. Flybase d. Zoo
- Which is an example of specialized database? CO2K3
a. ProCarbDB b. Sugar c. SCOP d. CATH
- _____ is molecular visualization tool CO5K3
a. Byall b. Rasmol c. glow d. SCOP

Part B

5 x 6 = 30

Answer ALL questions

Each answer should not exceed 400 words or two pages

- 11.a. Discuss the applications of bio-informatics in healthcare. CO1K1
(or)
- 11.b. Interpret model organism database. CO1K2

- 12.a. Enumerate the nucleotide databases used. CO2K2
(or)
- 12.b. Compile notes on BLAST and its types. CO3K2
- 13.a. Elaborate the tools used to analyze protein structures. CO3K3
(or)
- 13.b. Explain in detail the specialized databases with examples. CO3K2
- 14.a. Discuss working of 2-D gel electrophoresis. CO4K2
(or)
- 14.b. Highlight the findings of human genome project. CO4K3
- 15.a. Analyze molecular visualization tools and write notes. CO5K3
(or)
- 15.b. Define QSAR. Explain its applications in drug designing. CO5K3

Part C

5 x 12 = 60

Answer ALL questions

Each answer should not exceed 800 words or four pages

- 16.a. Highlight different biological databases with examples. CO1K2
(or)
- 16.b. Establish findings about SCOP and CATH. CO1K2
- 17.a. Describe what is dynamic programming in bioinformatics. CO2K3
(or)
- 17.b. Construct a phylogenetic tree and explain any example. CO2K3
- 18.a. Compose notes on nucleotide databases with examples. CO2K3
(or)
- 18.b. Compile tertiary protein structure detection tools. CO3K3
- 19.a. Explain in detail ENCODE project. CO4K2
(or)
- 19.b. Determine role of 1000 genome and HAPmap project in human genome analysis. CO4K4
- 20.a. Elucidate the structure and function of genomics. CO5K4
(or)
- 20.b. Discuss molecular modelling in drug designing. CO5K4
