



## Avinashilingam Institute for Home Science and Higher Education for Women

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

Re-accredited with 'A+' Grade by NAAC. Recognised by UGC Under Section 12B

Coimbatore - 641 043, Tamil Nadu, India

### Master's Degree Examination – June / July 2021

#### II Semester

Class: I PG

Major: Biochemistry/ Biotechnology

Time : 3 Hours

Max Marks : 100

#### 20MBCC07 / 20MBTC09 Bioinformatics

##### Part- A

10X 1 = 10

##### Choose the Correct Answer

- Which of the following is an example of Homology and similarity tool? CO3 K6
  - BLAST
  - RasMol
  - EMBOSS
  - PROSPECT
- Which of the following scientists created the first Bioinformatics database? CO2K3
  - Dayhoff
  - Pearson
  - Richard Durbin
  - Michael.J.Dunn
- The laboratory work using computers and computer-generated models generally offline is referred to as \_\_\_\_\_. CO6K1
  - Insilico
  - Wet lab
  - Dry lab
  - All the above
- The term Bioinformatics was coined by \_\_\_\_\_. CO1K3
  - J.D Watson
  - Pauline Hogeweg
  - Margaret Dayhoff
  - Frederic Sanger
- The process of finding the relative location of genes on a chromosome is called \_\_\_\_\_. CO3K4
  - Gene tracking
  - Genome walking
  - Genome mapping
  - Chromosome walking
- What is the deposition of cDNA into the inert structure called? CO1K6
  - DNA probes
  - DNA polymerase
  - DNA microarrays
  - DNA fingerprinting
- Which of the following is untrue about SCOP? CO5K3
  - It is a database for comparing and classifying protein structures
  - It is constructed almost entirely based on manual examination of protein structures
  - The proteins are grouped into hierarchies of classes, folds, super families, and families
  - The SCOP families consist of proteins having low sequence identity (>30%)
- Stable complexes consist of proteins that are \_\_\_\_\_ associated with each other, like many \_\_\_\_\_ proteins for instance. CO2K2
  - temporarily, oligomeric
  - temporarily, monomeric
  - permanently, oligomeric
  - permanently, monomeric
- Sets of proteins that are part of stable complexes and sets of proteins involved in transient interactions \_\_\_\_\_ in terms of the similarity in gene expression among the set of proteins. CO6K4
  - are similar
  - differ
  - are same
  - show similar function
- Many levels of clone redundancy may be required to build a consensus map because individual clones can have \_\_\_\_\_. CO3K3
  - rearrangements
  - deletions
  - two separate fragments
  - vectors

**Part- B**

**5X 6 = 30**

**Answer all the questions**

**Each answer should not exceed 400 words or two pages**

- 11.a. Enumerate the database of SCOP. CO5K6  
(or)  
11.b. Outline components of literature database. CO1K4
- 12.a. Illustrate about BLOSUM – pairwise alignment tools. CO3K2  
(or)  
12.b. Write the concept of substitution matrices. CO1K2
- 13.a. Give an account on Detecting ORFs. CO4K2  
(or)  
13.b. Point out features of secondary structure of RNA. CO4K3
- 14.a. Evaluate the Modifications of DNA microarrays. CO3K1  
(or)  
14.b. Summaries the concept of Protein microarrays. CO6K2
- 15.a. Mention the Basic concepts – Metabolic network modeling. CO1K1  
(or)  
15.b. Describe the prediction of ligand binding. CO4K6

**Part- C**

**5X 12 = 60**

**Answer all the questions**

**Each answer should not exceed 800 words or four pages**

- 16.a. Demonstrate the scientific search engine of Entrez pubmed. CO3K2  
(or)  
16.b. Elaborately discuss scope, branches and applications of bioinformatics. CO1K4
- 17.a. How to construct the pylogenetic tree? Explain. CO4K5  
(or)  
17.b. Contrast between global (Needleman - Wunsch) and local (Smith - Waterman) alignment algorithms. CO1K2
- 18.a. How to predict the secondary structure of protein? Explain. CO5K3  
(or)  
18.b. Elucidate the designing primers and probes. CO2K2
- 19.a. Distinguish between traditional proteomics vs modern proteomics. CO3K2  
(or)  
19.b. Overviewed the characteristics of structural, functional and comparative genomics. CO4K6
- 20.a. Write a detail note on QSAR – high throughput screening. CO6K2  
(or)  
20.b. Represents the multiple steps involved in Computer -aided drug design. CO5K3

\*\*\*\*\*