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 **Time : 3 Hours**
Major: Bioinformatics **Max Marks : 100**

20MBIC10 Introduction to OMICs Technologies

Part A **10 X1 = 10**

Choose the Correct Answer

1. Identify the size of the human genome from the following. CO1 K1
   a. 2 billion base pairs b. 3 billion base pairs
   c. 4 billion base pairs d. 1 billion base pairs

2. Choose the correct definition of metagenomics from the following. CO1K3
   a. Study of genetic materials of human
   b. Study of genetic materials of bacteria
   c. Study of genetic materials recovered from environmental samples
   d. Study of genetic materials of model organisms

3. Infer the expansion of EST from the following. CO2K2
   a. Expressed Structure Tags b. Expressed Sequence Tags
   c. Expressed Sequence Time d. Expressed Structure Time

4. Select the technique used in gene expression analysis. CO2K4
   a. Microarrays b. Electrophoresis
   c. Chromatography d. Alignment

5. Identify the mobile metabolomic interface from the following: CO3K1
   a. Medwin b. Metlin c. Metmob d. Metome

6. Name the metabolic pathway database from the options. CO3K1
   a. BRENDA b. NCBI c. Uniprot d. KEGG

7. Infer the definition of Proteomics from the given options. CO4K4
   a. The Study of proteins in an organism
   b. The study of proteome at a given point in time
   c. The Study of Protein in a cell
   d. The study of genome that encodes proteins

8. Choose the protein sequencing method from the following. CO4 K3
   a. Sanger's method b. Mass Spectrometry
   c. Next generation Sequencing d. Pyrosequencing

9. Name the term used for the technique of comparison of genomes. CO5K1
   a. Comparative genomics b. Structural Genomics
   c. Functional genomics d. Artificial Genomics

10. Identify the term used to refer to the statistical analysis that combine the results of previous multiple scientific studies. CO5K1
    a. Metagenomics b. Meta-analysis c. Sub-analysis d. Statistical analysis

Part B **5x6=30**

Answer ALL Questions

Each answer should not exceed 400 words or two pages

11.a. Illustrate about C-value Paradox with examples. CO1K3

(or)

11.b. Demonstrate the techniques involved in metagenomics. CO1K3

12.a. Appraise on the applications of SAGE. CO2K4

(or)

12.b. Conclude on the salient features of array express with examples. CO2K4

13.a. Categorize the resources for metabolic pathway analysis and explain in brief. CO3K4

(or)

13.b. Evaluate the principle and applications of Capillary Electrophoresis with an example. CO3K5

14.a. Determine the method of separation of proteins using gel Electrophoresis. CO4K3

(or)

14.b. Report on the various methods of phylogenetic profiling for predicting protein-protein interactions. CO4K3

15.a. Interpret the applications of Comparative genomics with examples. CO5K3

(or)

15.b. Summarize the salient features of Evolutionary genomics. CO5K5

Part C **5 x 12 = 30**

Answer ALL Questions

Each answer should not exceed 800 words or four pages

16.a. Describe the methods and advantages of different genome sequencing techniques in detail. CO1K2

(or)

16.b. Summarize the salient features of Human genome project and explain its notable findings in detail. CO1K2

17.a. Discuss in detail about principle and method of gene expression analysis using microarrays. CO2K2

(or)

17.b. Illustrate with examples about transcriptomics study. CO2K3

18.a. Assess the applications of GC/MS and NMR in metabolomics. CO3K5

(or)

18.b. Point out the different tools and databases used in Metabolomics and explain in detail. CO3K4

19.a. Compare and contrast the various protein sequencing methods in detail. CO4K4

(or)

19.b. Distinguish between the experimental and computational methods of determining protein-protein interactions. CO4K4

20.a. Discuss in detail about the ethical, legal and Social issues involved in personal genomics. CO5K2

(or)

20.b. Employ the techniques involved in integrating Omics data and explain in detail. CO5K3

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