



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: Bioinformatics

Time : 3 Hours

Max Marks : 100

20MBIC08 Structural Bioinformatics

Part A

10 x 1 = 10

Choose the Correct Answer

1. What is the length of a motif, in terms of amino acids residue? CO4K2
a. 30- 60 b. 10- 20
c. 70- 90 d. 1- 10
2. Which of the following is false about the 'loop' structure in proteins? CO5K1
a. They connect helices and sheets
b. They are more tolerant of mutations
c. They are more flexible and can adopt multiple conformations
d. They are never the components of active sites
3. Which of the following wrongly describes protein domains? CO2K5
a. They are made up of one secondary structure
b. Defined as independently foldable units
c. They are stable structures as compared to motifs
d. They are separated by linker regions
4. The protein structural motif domain- helix loop helix are contained by all of the following except _____ CO2K2
a. Scleraxis b. Neurogenins
c. Transcription Factor 4 d. Leucine zipper
5. In CATH, Structural domain separation is carried by _____ CO1K5
a. manual comparison only
b. computer programs only
c. human expertise only
d. a combined effort of a human expert and computer programs
6. _____ of covariation can be _____ to the RNA structure and functions. CO4K1
a. Any lack, deleterious b. Any lack, benign
c. Any abundance, deleterious d. Any inadequacy, advantageous
7. An aspect of the comparative method is to select a _____ structure through consensus drawing. CO4 K4
a. relatively distinct b. remote
c. common d. least abundant
8. In ab initio approach, generally, when a base pairing is formed, the energy of the molecule is _____ because of attractive interactions between the two strands. CO3K2
a. lowered b. increased
c. multiplied d. kept stable
9. Which of the following is untrue about DNA sequencing? CO1K1
a. It is now routinely carried out using the Sanger method
b. This doesn't make use of DNA polymerases
c. This involves the synthesis of DNA chains of varying length
d. The DNA synthesis is stopped by adding dideoxynucleotides
10. The shotgun approach _____ sequences clones from _____ of cloned DNA. CO2K3
a. randomly, one end b. randomly, both ends
c. specifically, both ends d. specifically, one end

PART- B**5X 6 = 30****Answer all the questions****Each answer should not exceed 400 words or one pages**

- 11.a. Demonstrate the sigma, pi bond and hybridization. CO1K6
(or)
- 11.b. Describe the various types of hydrogen bonding. CO5K2
- 12.a. Illustrate about formations of polysaccharides. CO2K1.
(or)
- 12.b. Write the short note on monosaccharides. CO4 K5
- 13.a. Point out conformational properties of proteins. CO6K6
(or)
- 13.b. Describe the structural bases of nucleic acid. CO1K4
- 14.a. Illustrate about protein-DNA interaction. CO3K1
(or)
- 14.b. What are the factors determining protein stability? Discuss. CO4K5
- 15.a. List out important features of motif. CO2K1
(or)
- 15.b. Give an account on protein domain. CO3K3

PART- C**5X 12 = 60****Answer all the questions****Each answer should not exceed 800 words or three pages**

- 16.a. Write a detail note on stereoisomerism and its significance. CO2K6
(or)
- 16.b. Discover the Molecular orbital theory and its applications. CO4K4
- 17.a. Discuss the classification of lipids on backbone structure. CO3K1
(or)
- 17.b. Evaluate the sources, functional unit of water soluble vitamins. CO5K3
- 18.a. Elucidate the structure and classification of amino acids. CO6K2
(or)
- 18.b. Enumerate the Watson Crick model of DNA molecules. CO4K5
- 19.a. Elaborately discuss Ramachandran plot. CO2K2
(or)
- 19.b. Discuss the mechanism of protein folding. CO5K4
- 20.a. Represents experimental principle and procedure of NMR spectroscopy CO2K3
(or)
- 20.b. Describe the Hidden Markov Model and its applications. CO4K1
