

M.Sc Sem-3 Examination

504

Bioinformatics

November-2024

Time : 2-30 Hours]

[Max. Marks : 70]

Question 1: A. What are the key differences between structure-based and ligand-based drug design approaches in CADD? (7 marks)

B. Explain various stages involved in in silico drug discovery. (7 marks)

OR

A. How can virtual screening reduce the time and cost of identifying lead compounds in drug discovery? (7 marks)

B. How does the ADMET profiling in silico enhance the drug development process? (7 marks)

Question 2: A. Explain MHC class I and class II antigen presentation pathways. (7 marks)

B. Write a note on molecular docking and steps involved in it? (7 marks)

OR

A. Explain the concept of molecular descriptors & types of descriptors used for QSAR. (7 marks)

B. Explain molecular simulations technique and its advantages. (7 marks)

Question 3: A. Explain in detail about Biomarkers and its types. (7 marks)

B. Write a note on personalized medicine & explain its importance with an example. (7 marks)

OR

A. Differentiate between pharmacogenomics and pharmacogenetics. (7 marks)

B. Write a note on drug metabolizing enzymes with example of warfarin and CYP2c9. (7 marks)

Question 4: A. Write a note on functional annotation and explain GO: Molecular function and GO: Biological process. (7 marks)

B. Explain microarray technique with diagram. (7 marks)

OR

A. Write a note on classification of microarray and its applications. (7 marks)

B. What is epigenetics? Explain any one from the following:

1. DNA methylation, 2. Histone Modifications (7 marks)

Question 5: Attempt any seven out of twelve. (14 marks)

1. What is the advantage of using CADD?

2. What is a drug target, and why is it important in drug development?

3. Define force field.

4. Define Induced Fit & Lock-Key Rigid Docking.

5. Write a note on applications of QSAR.

6. What is a pharmacophore.?

7. Define pharmacogenomics

8. What is the full form of ADMET and its importance in drug development

9. Define what is genotype and phenotype.

10. Define carbohydrate microarray.

11. Define RNA interference or Post translational gene silencing(PTGS)

12. What are the outputs of Molecular docking and Explain Score of docking.