

## PG Diploma in Bioinformatics Examination

PGD BIN 502

## Computational Drug Discovery Pharma.

Time : 2-30 Hours]

May-2025

[ Max. Marks : 70

**Q1.I.** Describe the process of structure-based drug design (SBDD). What are the key steps and challenges involved in designing a drug using the 3D structure of a target protein? (7)

II. Explain the process and importance of disease gene identification. (7)

OR

I. Define in silico drug discovery and Explain various stages involved in in silico drug discovery. (7)

II. Discuss the importance of ADMET (Absorption, Distribution, Metabolism, Excretion, and Toxicity) analysis in in silico drug design. (7)

**Q2.I.** Explain the role of MHC molecules in epitope presentation and immune response. (7)

II. Explain de novo drug design in detail. (7)

OR

I. Write a note on molecular docking and steps involved in it. (7)

II. Write a note on QSAR technique. (7)

**Q3.I.** Explain in detail about Biomarkers and its types. (7)

II. Differentiate between pharmacogenomics and pharmacogenetics. (7)

OR

I. What is personalized medicine and mention its applications. (7)

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

**Q4.I.** What is epigenetics? Explain any one from the following: (1- DNA methylation, 2-Histone Modification, 3-RNA interference). (7)

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

OR

I. Explain microarray technique with diagram. (7)

II. Write a note on functional annotation and explain GO: Molecular function and GO: Biological process. (7)

**Q.5** Answer the following. (Any Seven) (14)

1. What is the advantage of using CADD?

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

3. What is the significance of Lipinski's Rule of Five in drug discovery?

4. What is the significance of studying drug interactions with gene products?

5. What is the difference between a B-cell epitope and a T-cell epitope?

6. Define force field

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

8. Define haplotypes.

9. Define pharmacogenomics

10. Define what is genotype and phenotype.

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

12. Explain factors affecting differential gene expression.