# INDIRA UNIVERSITY, PUNE

***SCHOOL OF PHARMACY- MPHARM (Pharmacology)***

***Term End Examination (2025 Pattern) April- May – 2026- Semester – II***

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**Course Name: Principles of Drug Discovery** **Max. Marks: 75**
**Course Code: MPL 203T** **Time: 3:00 Hrs.**

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**Instructions**

- All Questions are Compulsory. Write two sections on separate answersheets.
- Neat diagram must be drawn wherever necessary.
- Figures to the right indicate full marks.

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## Section : I

**Q.1** **Solve any ONE from the following** **15 Marks**

**a.** Discuss the fundamental principle of combinatorial chemistry and elaborate the various techniques used to generate chemical libraries.

**b.** Explain the characteristics of an ideal drug target and discuss the methods used for target identification.

**Q.2** **Solve any FOUR from the following** **20 Marks**

**a.** Discuss the role of high-throughput screening in identifying potential lead compounds.

**b.** Describe how genomics and proteomics contribute to modern drug discovery.

**c.** Write a short note on biochemical assays.

**d.** Describe how DNA microarrays help in gene expression analysis for target validation.

**e.** Explain the role of NMR spectroscopy in protein structure prediction.

**f.** Explain the role of bioinformatics in drug discovery and development.

## Section : II

**Q.3** **Solve any ONE from the following** **15 Marks**

**a.** Discuss how the QSAR approach can guide the development of a new pharmaceutical product.

**b.** Define the term “biomarker” and describe the major types of biomarkers.

**Q.4** **Solve any TWO from the following** **15 Marks**

**a.** Discuss label-free assay systems and their role in real-time analysis of biomolecular interactions in drug discovery.

**b.** Explain imaging technologies used in drug development with suitable examples.

**c.** What are membrane transport proteins? Explain their types and functions.

**d.** Explain kinetic fluorescent measurement systems with their principles, instrumentation and applications in drug discovery.

**Q.5** **Solve any TWO from the following** **10 Marks**

**a.** Write a short note on rational strategies used for repurposing existing drugs.

**b.** Explain the concept of enzyme-substrate specificity and briefly describe the lock-and-key and induced fit models.

**c.** Explain classical drug targets and how they discovered and validated in drug development.

**d.** Discuss the general considerations for all screening methods in drug discovery.

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