

**QP CODE: 212329**

**Reg. No:.....**

**Second Semester M. Pharm Degree Supplementary Examinations  
February 2025**

**M.Pharm (Pharmaceutical Analysis)**

**Paper II: Modern Bio-Analytical Techniques (MPA 202T)**

**(Common for 2017 and 2019 Scheme)**

**Time: 3 Hours**

**Total Marks: 75**

- *Answer all questions to the point neatly and legibly • Do not leave any blank pages between answers • Indicate the question number correctly for the answer in the margin space*
- *Answer all parts of a single question together • Leave sufficient space between answers*
- *Draw table/diagrams/flow charts wherever necessary*

**Essays**

**(3x10=30)**

1. Compare and contrast protein precipitation, liquid extraction and solid phase extraction methods of sample preparation in bioanalysis.
2. Explain cell culture and its applications in drug development.
3. Explain three steps in metabolite identification.

**Short Notes**

**(9x5=45)**

4. Explain the different types of stability studies carried out in bioanalytical method validation. Discuss the significance of each.
5. Explain BCS classification system and what is its application.
6. How is in vitro intestinal permeation study carried out.
7. Differentiate between thermodynamic and kinetic solubility. List the applications of each.
8. Describe the mechanism of non-microsomal pharmacokinetic drug interaction.
9. Explain the factors to be considered while measuring the toxicokinetics in preclinical evaluation of a new drug.
10. Why LCMS is a better analytical technique than ELISA in measuring toxicokinetics. Explain.
11. Differentiate cell lines and cell strains.
12. Explain the various types of bioequivalence studies as per USFDA.

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