

## School of Biomedical Science

Master of Science in Medical Biotechnology  
Semester End Examination - Jun 2024

Duration : 180 Minutes  
Max Marks : 100

### Sem II - Q1PP207B - MBAMBT2001 - Analytical Techniques

General Instructions

Answer to the specific question asked

Draw neat, labelled diagrams wherever necessary

Approved data hand books are allowed subject to verification by the Invigilator

- 1) Based on rotors how will you classify centrifuges? K1(2)
- 2) Explain the principles of stable isotope labeling of proteins, nucleic acids, and metabolites, and how these labeled molecules are detected and quantified. K2(4)
- 3) Discuss the steps involved in performing a thin-layer chromatography experiment. K2(6)
- 4) Illustrate different kinds of HPLCs, classified on the basis of the stationary phase. K3(9)
- 5) Explain the role of tracer techniques in bioreactor monitoring and control. K3(9)
- 6) Examine the process and instrumentation of ESI-MS to analyze a protein sample. K5(10)
- 7) Analyze the process of sample preparation for Mass-spec of a protein sample. K4(12)
- 8) Elaborate the similarities and differences between HPLC and FPLC. K5(15)
- 9) Design an experiment to compare the separation efficiency of different stationary phases in thin-layer chromatography (TLC) using a common mobile phase. K5(15)
- 10) Describe the mechanism of gel permeation chromatography (GPC) in separating macromolecules based on their size, and discuss its applications in polymer science and biochemistry. K6(18)