

Exam Date & Time: 13-Jul-2022 (10:00 AM - 01:00 PM)



## MANIPAL ACADEMY OF HIGHER EDUCATION

Manipal Academy of Higher Education, Manipal MPharm Theory End-Semester Examinations.

### PROTEINS AND PROTEIN FORMULATIONS [PBT-MPB201T-S1]

Marks: 75

Duration: 180 mins.

#### SECTION - A

Answer all the questions.

Answer the following (10 marks x 5 = 50 marks)

- 1) Discuss different types of protein structures. Differentiate alpha helix and beta-sheet protein conformations. (10)
- 2) Discuss in detail the factors to be considered while planning for a large scale microbial intracellular protein extraction and purification process. (10)
- 3) Enlist the degradation mechanisms and discuss the analytical methods to evaluate it as a part of preformulation development. (10)
- 4) Elaborate on biophysical characterization techniques and forced degradation studies for protein formulation analysis. (10)
- 5) Give the definitions of biosimilars and sketch the approval process of the same. Discuss the levels of similarity and explain the clinical pharmacology studies in the assessment of biosimilars. (10)

#### SECTION - B

Answer all the questions.

Answer the following (5 marks x 5 = 25 marks)

- 6) Describe Edman degradation technique of protein sequencing. (5)
- 7) Explain the major factors that influences protein folding and stability. (5)
- 8) Write a short essay on approaches used to increase the stability and efficacy of peptides by altering their structure. (5)
- 9) Write a note on polymers used for controlled delivery of protein and peptide drugs. (5)
- 10) Explain the concepts of clearance and half-life and mention its significance in the development of a protein formulation. (5)

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