

# Question Paper

Exam Date & Time: 03-May-2018 (02:00 PM - 05:00 PM)



## MANIPAL ACADEMY OF HIGHER EDUCATION

### MANIPAL COLLEGE OF PHARMACEUTICAL SCIENCES

#### END SEMESTER THEORY EXAMINATIONS- MAY 2018

#### PROGRAM: MPHARM SEMESTER 2 (PHARMACEUTICAL BIOTECHNOLOGY)

DATE: 03/05/2018

TIME: 2:00 PM - 5:00 PM

#### Proteins and Protein Formulations [PBT-MPB201T]

Marks: 50

Duration: 180 mins.

**a**

#### Answer all the questions.

Answer the following (5 marks x 8 = 40 marks)

- 1) Explain the three major forces or interactions of polypeptide that affect their stability and folding. (5)
- 2) Describe the principle involved in protein characterization by proteolytic cleavage. (5)
- 3) Enlist the common steps involved in protein purification, in the sequence they are taken up. Write the principle involved in salting-out of proteins. (5)
- 4) Write the principle involved in differential centrifugation and chromate-focusing techniques. (5)
- 5) Briefly outline the principle involved in sterility testing of a parenteral preparation. Explain the term product positive control. (5)
- 6) Discuss the technique of peptide mapping as a tool for analysing the protein formulations. (5)
- 7) How to detect viral contaminants in a finished protein formulation. Enlist and outline different viral assays employed for this purpose. (5)
- 8) Give a brief description on different types of concentration-response relationships in pharmacodynamics models. Give equations for the same. (5)

**b**

#### Answer all the questions.

Answer the following with specific answers (2 marks x 5 = 10 marks)

- 9) Write the applications of Circular Dichroism (CD) spectroscopy. (2)
- A)
- B) Generally, natural peptides are not suitable for use in therapeutics, if used directly. Give reasons. (2)
- C) Enlist various physical instabilities commonly found in protein formulations. (2)
- D) Pharmacological effect of a drug shows better correlation with its plasma concentration than with its dosage. Why? (2)
- E) What is the definition of WHO for a biosimilar? (2)

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