



HU-M2011120 Seat No. _____

M. Pharm (Sem. II) (CBCS) Examination

June / July - 2017

Proteins & Protein Formulations (Core - IV)

Time : 3 Hours]

[Total Marks : 80

- Instructions :**
1. Answer and tie up both the sections separately.
 2. Figures to the right indicates marks.
 3. Answer the three (03) questions from each section.
 4. Question one (01) and question (05) are compulsory.
 5. Draw neat and clean diagrams as required.

SECTION - I

- 1 Write a note on following : (any seven) **7×2=14**
- A. C-terminal tags
 - B. Advantages of protein and peptide drug delivery system.
 - C. Physico-chemical properties to be considered for protein formulation development.
 - D. Write a note on non-destructive method of protein quantification.
 - E. Gene shuffling
 - F. Protein engineering
 - G. Describe the principle of gel electrophoresis.
 - H. Describe the principle of PCR.
 - I. Polypeptide
 - J. Protein data bank.

- 2 Enlist different techniques of protein engineering and describe any two in detail. 13
- 3 What are protein drugs? Give its examples. Describe site directed mutagenesis in detail. 13
- 4 Answer the following questions :
- A. Enlist different methods of protein purification and describe any one in detail. 7
- B. Define liposome and explain the classification of liposome in detail. 6

SECTION - II

- 5 Answer any two out of three : $7 \times 2 = 14$
- A. Describe principle and methodology of 2D gel electrophoresis.
- B. Write a note on PEGylation : successful approach to drug delivery.
- C. Write a note on Isotope labelling.
- 6 What do you mean by Edman degradation ? Describe in detail about methods of Protein Sequencing. 13
- 7 Write a detailed note on different strategies used to prevent protein degradation. 13
- 8 Answer the following questions :
- A. Write a note on different immunotechniques (atleast two) along with its advantages and limitations. 7
- B. Discuss the methods for preparation of Nano spheres. 6