



**NF-02011265**      Seat No. \_\_\_\_\_

**M. Pharm. (Sem. I) (CBCS) Examination**

**January - 2017**

**Pharmaceutical & Industrial Biotechnology  
(Elective-I)**

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. DNA Vaccines
  - B. Cell culture
  - C. Mutagenesis
  - D. ELISA
  - E. Immunoblotting
  - F. Chromatofocusing
  - G. Iso electric focusing
  - H. Industrially important proteins
  - I. Periodic revalidation
  - J. PEGylation.

- 2** Answer the following questions :
- A. Write a detail note on Climatic zones. **07**
- B. What are the different environmental factors which affects stability of biotechnology derived products ? **06**
- 3** Answer the following questions :
- A. What are the issues with DNA and Plasmid DNA vaccines ? **07**
- B. Write a note on Matrixing Bracketing Techniques in detail. **06**
- 4** Answer the following questions :
- A. What are the importance of purification process of viral clearance ? **07**
- B. Write a detail note on cell line culture process validation and characterization. **06**

## SECTION – II

- 5** Answer any **two** out of three : **7×2=14**
- A. Smart materials.
- B. Industrially important Proteins.
- C. What are the problems with Protein drugs, how to deal with these problems ?
- 6** Answer the following questions :
- A. Define any two analytical methods for protein formulation which depends on surface charge of the protein ? **07**
- B. Write a note on Ultra Centrifugation in detail. **06**
- 7** Answer the following questions :
- A. Discuss in detail about application of enzymes. Describe its uses in Vaccine production ? **07**
- B. Write a detail note on enzyme immobilization. **06**
- 8** Answer the following questions :
- A. What are the importance of Proteins in our life ? **07**
- B. Name different protein drugs available in the market and describe any one in detail. **06**