4. Draw a schematic to illustrate (**any two**) : (7.5×2=15)

   (i) Renaturation of denatured ribonuclease.

   (ii) A discontinuous SDS-PAGE.

   (iii) Oxygen saturation curves of haemoglobin & myoglobin.

5. (a) Why do you think Sanger's protein sequencing isn't a preferred method over any other method you know? Nevertheless, justify his choice of using FDNB as a tag for N-terminal labelling.

   (b) Are there chances/risks of a patient developing an immune reaction on receiving a therapeutic protein made in *E. colil* Give reasons and solutions. (8,7)

6. (a) Justify the use of pectinase and xylanase in juice processing and proteases in detergents? To purify such enzymes, would you prefer high-pressure chromatography or low-pressure chromatography?

   (b) Explain why i) Poor-quality data and ii) Absence of informed consent constitute ethical issues while considering proteomic data in biomedical applications? (8,7)

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 9836 **K**

Unique Paper Code : 3183010016

Name of the Paper : Protein Structure and Function: Advanced Concepts and Biomedical Applications

Name of the Course : **B.Sc. (H) Biomedical Sciences. Discipline Specific Elective (NEP)**

Semester : VII

Duration : 2 Hours Maximum Marks : 60

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt **four** questions in all. Question No. **1** is compulsory.
3. Subparts of the questions should be attempted together.
4. Draw illustrations or diagrams wherever necessary.

1. (a).Define : (5×1=5)

   (i) Ampholytes

   (ii) HRP

   (iii) Enzyme replacement therapy

   (iv) Domain swapping

   (v) Helix-turn-helix motif

   (b) Give one word for : (5×1=5)

   (i) A large, barrel-shaped molecular machine thatassists in the proper folding of proteins.

   (ii) The manual sequencing method that uses Phenylisothiocyanate (PITC) to cleave the N-terminal residue.

   (iii) An amino acid constituent of an electrophoresis that plays a key role in protein separation.

   (iv) A technique created to provide protein-friendly alternatives to high-pressure liquid chromatography.

   (v) A chemical reagent that specifically cleaves peptide bonds at the C-terminal of methionine residues.

   (c) Give **two** major differences between the following : (2.5×2=5)

   (i) Myoglobin and haemoglobin.

   (ii) FPLC & PMF

2. Give the principle and applications/significance of (**any two**) : (7.5×2=15)

   (i) Post-translational modification.

   (ii) Alkaline Phosphatase (ALP) in protein detection assays. Give an example.

   (iii) ABC Transporter Proteins as a major class of membrane proteins.

3. Write a short note (**any two**) on the following : (7.5×2=15)

   (i) DNA-binding regulatory proteins.

   (ii) Different methods for determining protein stability.

   (iii) Chaperonin's energy-intensive assistance in protein-folding.