

Sl. No. of Ques. Paper : 1429 F-7
Unique Paper Code : 2581302
Name of Paper : Protein Chemistry and Function
Name of Course : B.Sc. (Hons.) Biomedical Sciences (Erstwhile FYUP)
Semester : III
Duration : 3 hours
Maximum Marks : 75

(Write your Roll No. on the top immediately on receipt of this question paper.)

Attempt five questions in all. Question No. 1 is compulsory.

1. (a) Define the following:
- (i) Zwitter ion
 - (ii) Zymogen
 - (iii) Secondary structure of proteins
 - (iv) Paper chromatography
 - (v) Beer's Law. 1×5
- (b) Give an example of:
- (i) An acidic amino acid
 - (ii) A secondary structure of protein
 - (iii) A disease caused by protein misfolding
 - (iv) Chemical used for protein denaturation
 - (v) Covalent bond in a protein. 1×5
- (c) Enzymes function by lowering the activation energy barrier. Justify. 5
2. Differentiate between the following:
- (a) Primary and Tertiary structure of proteins 5
 - (b) Allosteric enzymes and isoenzymes 5
 - (c) Alzheimer's disease and Parkinson's disease. 5×3
3. State with justification whether the following statement is True or False:
- (a) Thin layer chromatography is a superior technique to paper chromatography.
 - (b) Heat cannot denature proteins.

- (c) Affinity chromatography is a more specific separation technique than ion-exchange chromatography.
- (d) p53 disorder is related to proteins mis-folding.
- (e) Binding energy determines specificity and catalytic property of enzymes. 3×5
4. Write short notes on the following:
- (a) Bonds and interactions that maintain the native state of proteins.
- (b) Gel-filtration chromatography
- (c) Competitive and non-competitive inhibition of enzymes. 5×3
5. Explain the following and also give their significance:
- (a) Lock and key theory of enzyme activity
- (b) Coenzymes
- (c) SDS-PAGE. 5×3
6. (a) Give a graphical representation of double reciprocal plots.
- (b) Give a detailed principle of Isoelectric focussing (IEF) giving a schematic diagram.
- (c) Give an account of how proteins fold. 5×3
7. (a) Give the structure of a tripeptide. 3
- (b) Give any two examples of protein separation techniques. 2
- (c) Discuss the chaotropic agents that denature a protein. 4
- (d) Explain briefly the general properties of allosteric enzymes. 3
- (e) Give two important features of alpha helix and beta sheets. 3