

This question paper contains 4 printed pages]

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S. No. of Question Paper : 5316

Unique Paper Code : 2174001206

Name of the Paper : GE : Molecules of Life

Name of the Course : All Undergraduate Courses except
with Chemistry

Semester : II/IV/VI

Duration : 2 Hours

Maximum Marks : 60

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

Attempt any four questions.

All questions carry equal marks.

1. (a) What is ninhydrin reagent ? Give the mechanism of reaction of ninhydrin with α -amino acids.
- (b) Describe Edman's method of N-terminal analysis. What is the advantage of this method over other methods of N-terminal analysis ?
- (c) Write a short note on the primary and secondary structure of proteins.

3×5=15

P.T.O.

2. (a) What happens when a solution of (+) glucose in water (specific rotation, $\alpha = 112^\circ$) is kept for some time ? Name the phenomena involved and discuss its mechanism.
- (b) How is electrophoresis used as a method for separation of amino acids ?
- (c) Differentiate between reversible and irreversible inhibition of enzyme activity. 3×5=15
3. (a) Draw the Haworth projection formula for :
- (i) β - D - glucopyranose
- (ii) α - D - fructofuranose
- (b) What are polysaccharides ? Name the *two* polysaccharides obtained upon hydrolysis of starch. What is the difference between the two ?
- (c) Glucose and fructose yield the same osazone when treated with excess phenylhydrazine is used. Explain and give the reactions. 3×5=15
4. (a) What is cofactor in enzymes ? Explain the different types of cofactors.

- (b) Write short notes on the following (any two) :
- (i) Structure activity relationship (SAR) of drug molecules
 - (ii) Lock and Key theory
 - (iii) Alpha and beta anomers of glucose
- (c) Explain the factors which affect the enzyme activity. 3×5=15
5. (a) Give chemical synthesis of a dipeptide Gly-Ala using appropriate reagents and protecting groups.
- (b) Write down the name and structure of C-4 epimer of D-Glucose.
- (c) A decapeptide undergoes partial hydrolysis to give peptides whose amino acid composition are shown. Reaction of the intact decapeptide with carboxypeptidase A releases Asp. What is the sequence of the decapeptide ?
- (1) Ala, Trp
 - (2) Pro, Val
 - (3) Trp, Ala, Arg
 - (4) Ala, Glu
 - (5) Val, Pro, Asp
 - (6) Arg, Gly
 - (7) Met, Pro, Leu, Glu
 - (8) Glu, Ala, Leu
- 3×5=15

6. (a) Differentiate between :

(i) Globular and Fibrous Proteins

(ii) Competitive and non-competitive inhibition

(b) What is active site of an enzyme ? Explain enzyme specificity.

(c) What are the different classes of enzymes as laid by the Enzyme Commission ? To which of these classes does the enzyme succinate dehydrogenase belong ?

3×5=15