

5. (a) What is the significance of cofactors and coenzymes in enzyme catalysis? Give two examples of each.
- (b) What are activating groups? Discuss their significance in peptide synthesis with the help of a suitable example.
- (c) What is meant by specificity of enzyme action? Enlist the factors affecting enzyme action. (5,5,5)
6. (a) Suggest an enzyme / class of enzymes that may be used for the following conversions
- (i) Ethanol to Ethanal
 - (ii) Glucose to Gluconic acid
 - (iii) Lipids to fatty acids and glycerol
 - (iv) Starch to simple sugars
 - (v) Proteins to amino acids
- (b) List the differences between DNA and RNA.
- (c) What are reducing and non-reducing sugars? Out of Maltose, Starch and Sucrose, which will reduce Fehling's solution and why? (5,5,5)

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 2951

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Unique Paper Code : 2173522004

Name of the Paper : MOLECULES OF LIFE

Name of the Course : **B.Sc. Prog.**

Semester : IV / VI – NEP-UGCF

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 any **FOUR** questions.
 3. **All** questions carry equal marks.
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1. (a) How do anomers differ from epimers? Explain with the help of suitable examples.
 - (b) What are enzymes? Discuss the functional classification of enzymes.
 - (c) Synthesize a dipeptide Ala-Val using Merrifield solid phase peptide synthesis. (5,5,5)

2. Write short notes on any **three** :

(a) Biological functions of Carbohydrates

(b) Denaturation of proteins

(c) Nucleotides and Nucleosides

(d) Watson - Crick model of DNA (5,5,5)

3. (a) Define Isoelectric point (pI) of an amino acid. Based on the pKa values of the α carboxyl (2.19), side-chain carboxyl (4.25), and α amino (9.67) groups, calculate the isoelectric point (pI) of Glutamic Acid.

(b) What are Disaccharides? Draw the Haworth projection of the disaccharide present in milk.

(c) Discuss the role of different types of RNA in protein synthesis. (5,5,5)

4. (a) Explain the mechanism(s) of enzyme action.

(b) What is the primary structure of peptides? Explain any two methods used in its determination.

(c) Complete the following reactions : (5,5,5)

