

4655

4

(b) Explain, what is the difference between the anomeric and epimeric carbons in the Haworth projection of glucose?

(c) Give the classification of enzymes with examples.
(5,5,5)

(200)

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 4655

J

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

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.

1. (a) How does the phenomenon of mutarotation occurs in carbohydrates? Explain with a suitable example.

P.T.O.

- (b) What are disaccharides? Give the structures of sucrose and lactose. Mention the linkage present in them.
- (c) Write a short note on cellulose. (5,5,5)
2. (a) What are amino acids? Classify them on the basis of their chemical nature with examples.
- (b) Draw Fischer and Haworth Projection of α -D-fructofuranose and β -D-glucopyranose.
- (c) Write the steps in the synthesis of dipeptide Gly-Ala with the help of Merrifield solid phase synthesis. (5,5,5)
3. (a) What do you understand by stereochemical specificity and substrate specificity of an enzymes? Give example of each.
- (b) What are the different types of enzymes, and how are they classified based on their functions and mechanisms of action?

- (c) How do changes in temperature, pH, substrate concentration, and enzyme concentration influence the rate of reaction. (5,5,5)
4. (a) Define isoelectric point. Calculate isoelectric point of glutamic acid. Given $pK_a(\text{COOH}) = 2.19$, $pK_a(\text{NH}_3^{3+}) = 9.67$, $pK_a(\text{side chain}) = 4.25$
- (b) Write the short note on secondary structure of proteins.
- (c) Give the classification and biological uses of proteins. (5,5,5)
5. (a) Explain the cyclic structure of glucose.
- (b) What is enzyme inhibition? Explain competitive, non-competitive and allosteric inhibitions.
- (c) Explain the stereospecificity of an enzyme on the basis of Lock and Key model. (5,5,5)
6. (a) Explain-Globular and Fibrous Proteins.