

This question paper contains 3 printed pages]

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S. No. of Question Paper : 2421

Unique Paper Code : 2172701

F-4

Name of the Paper : Molecules of Life

Name of the Course : Allied Course : Botany/Food Tech.

Semester : IV

Duration : 3 Hours

Maximum Marks : 75

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

Attempt any five questions.

All questions carry equal marks.

1. Write short notes on any three of the following :

(a) Kiliani-Fischer synthesis

(b) Merrifield solid phase synthesis of peptides

(c) Trans fat

(d) Adenosine Triphosphate (ATP) as universal currency of cellular energy. 5,5,5

2. (a) What are the limitations of open chain structure of glucose ?

(b) Usually ketones do not reduce Tollen's and Fehling's reagents but fructose gives positive test with Tollen's and Fehling's reagents. Explain with chemical reactions involved.

(c) How are anomers different from epimers ? Give one example of each.

(d) Define calorific value of a foodstuff. 5,4,4,2

P.T.O.

3. (a) Discuss Edman degradation method for sequence analysis of polypeptides. Why is this method preferred over Sanger's method ?
- (b) Differentiate between fibrous and globular protein with suitable examples.
- (c) Write chemical structure and systematic name of sucrose.
- (d) What is the difference between fat and oil ? 6,4,3,2
4. (a) Explain competitive and non-competitive inhibition of enzyme action with appropriate pictorial presentation.
- (b) Discuss Watson and Crick model of DNA.
- (c) Define Omega fatty acids. Mention their biological importance with appropriate examples. 5,5,5
5. (a) Draw a complete chemical structure of a segment of RNA with the following base sequence : adenine, uracil and cytosine.
- (b) Differentiate between apoenzyme and holoenzyme with the help of suitable examples.
- (c) Explain the process of translation of DNA with the emphasis on the role of tRNA and mRNA.
- (d) What is the difference between reducing and non-reducing sugars ? 5,3,5,2

6. (a) Give the name of a steroid based hormone. Discuss the role of cholesterol in the biological system.
- (b) Discuss the functions of triglycerides and phospholipids.
- (c) What is fermentation ? Illustrate the conversion of pyruvate to ethanol.
- (d) Enzymes are stereospecific in nature. Explain with an example. 4.4.4.3
7. (a) Explain the steps involved in the Krebs's cycle.
- (b) Explain the types of bonding responsible for the tertiary structure of protein.
- (c) What is the effect of temperature and pH on the activity of enzyme ? 6.4.5