

2025

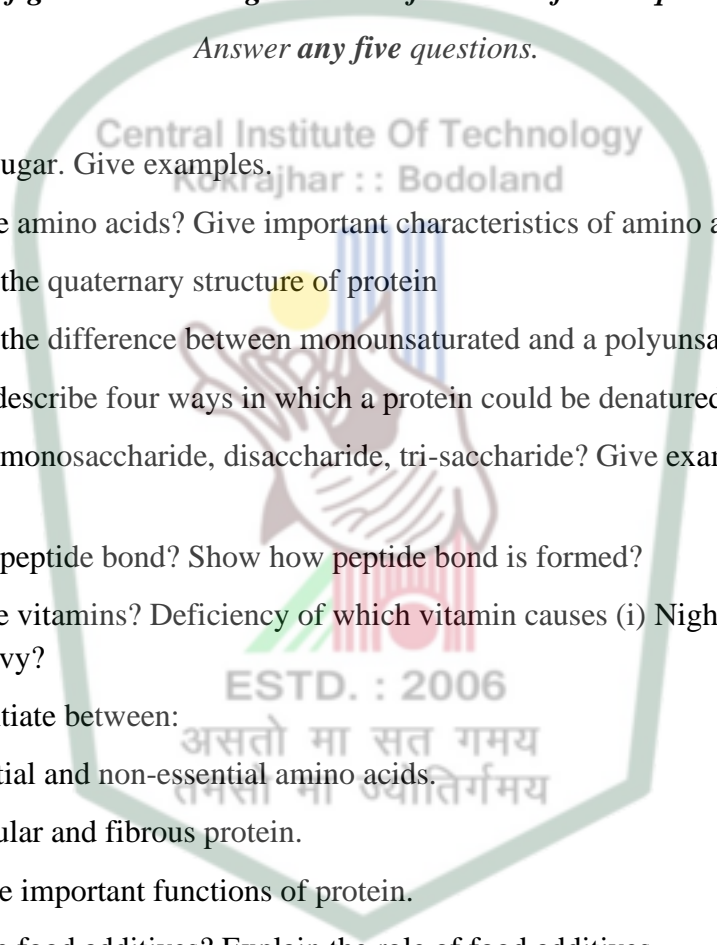
**BASICS OF FOOD CHEMISTRY**

Full Marks: 100

Time: Three hours

*The figures in the margin indicate full marks for the questions.*

*Answer any five questions.*

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1. a) Define sugar. Give examples. 5  
b) What are amino acids? Give important characteristics of amino acids. 6  
c) Explain the quaternary structure of protein 5  
d) Explain the difference between monounsaturated and a polyunsaturated fat? 4
2. a) Briefly describe four ways in which a protein could be denatured. 4  
b) What is monosaccharide, disaccharide, tri-saccharide? Give example for each. 6  
c) What is peptide bond? Show how peptide bond is formed? 5  
d) What are vitamins? Deficiency of which vitamin causes (i) Night blindness (ii) Scurvy? 5
3. a) Differentiate between: 3+3  
i) Essential and non-essential amino acids.  
ii) Globular and fibrous protein.  
b) Write the important functions of protein. 4  
c) What are food additives? Explain the role of food additives 6  
d) What are fatty acids? Write three important characteristics of fatty acids. 4
4. a) Define ester bond. How are triglycerides formed? 6  
b) What are food enzymes and why it is important? 4  
c) What are acidic and basic amino acids? Give examples. 4  
d) Define water activity. Explain the relationship between moisture content and water activity? 6

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|---|---|----------|
| 5 | a) Define the following terms: Hexose, Saponifiable lipids, Free water, Zwitterion, Anticaking agents.  | (2x5=10) |
|   | b) Explain the $\alpha$ -helix, $\beta$ -pleated sheet and triple helix secondary structure of protein. | 10       |
| 6 | a) What are the different factors affecting the enzyme action?  | 6        |
|   | b) What holds a protein in its tertiary structure?  | 6        |
|   | c) Name some saturated fatty acids.   | 4        |
|   | d) What is N-terminal and C-terminal in protein?  | 4        |
| 7 | a) Write brief notes on: (any four)   | 4x4      |
|   | i) Complex lipids   |          |
|   | ii) Starch  |          |
|   | iii) Classify lipids  |          |
|   | iv) Significance of water activity  |          |
|   | v) Chemical nature of enzymes.  |          |
|   | b) Define hydrolysis. What is the product of hydrolysis of lactose, maltose, and sucrose?               | 4        |

