

2022

FOOD CHEMISTRY

Full Marks: 100

Time: Three hours

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

Answer any five questions.

1. a) What is a saccharide molecule? Write the name of two monosaccharides obtained on hydrolysis of lactose sugar. 4
- b) Explain Alpha-helix structure of protein with a suitable diagram. 5
- c) Define hydrogenation? Write the reaction process of hydrogenation of unsaturated fats. 6
- d) What are nature identical flavors? Give examples. 5
2. a) Compare 'cis' fat with 'trans' fat 4
- b) Explain the relation between water activity and moisture content. 6
- c) Explain the hydrolysis of triglycerides. 5
- d) Describe the term D- and L-configuration used for sugars with examples. 5
3. a) What is fatty acid micelle? Explain how micelles are formed. 2+2=4
- b) Draw molecular diagrams showing the formation of a peptide bond. 5
- c) What are the main functions of food additives. Give examples of thickening agents. 6
- d) What is essentially the difference between the α -form of D-glucose and β -form of D-glucose? 5
4. a) Define the following terms: 2x5=10
- i) Zwitterion ii) Polar amino acid iii) Triose iv) US FDA
- v) Emulsion
- b) What is an emulsifying agent? Explain the role of emulsifying agents to stabilise the emulsions of oils. 4
- d) Write the chemical name of vitamin A, D and C and which diseases are caused by their deficiency? 6

5. a) Explain PUFA, SCFA, MCFA and LCFA giving example of each. 6
- b) What is free water? Write the relation between moisture content on wet basis and dry basis 1+4=5
- c) Explain the tertiary structure of protein. 5
- d) How can rancidification of fats and oils be prevented? 4
6. Distinguish between 4x5=20
- a) Simple and conjugate lipids
- b) Globular and fibrous protein
- c) Saturated and unsaturated fatty acid
- d) Peptide linkage and glycosidic linkage
7. a) Write short notes on any four of the following 4x4=16
- i) Starch
- ii) Fat soluble vitamins
- iii) Maillard reaction
- iv) Significance of a_w
- v) Artificial flavouring agent
- b) Explain the process of caramelization and its consequences. 4

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