

Enrollment No./Seat No.:

GUJARAT TECHNOLOGICAL UNIVERSITY
Bachelor of Engineering - SEMESTER - III EXAMINATION - WINTER 2025

Subject Code: BE03051021

Date: 17-12-2025

Subject Name: Food Chemistry

Time: 10:30 AM TO 01:00 PM

Total Marks: 70

Instructions

- 1. Attempt all questions.**
- 2. Make suitable assumptions wherever necessary.**
- 3. Figures to the right indicate full marks.**
- 4. Simple and non-programmable scientific calculators are allowed.**

	Marks
Q.1 (a) Define food chemistry and explain the importance of studying water activity in food systems.	03
(b) Discuss sorption isotherms and their role in predicting the shelf life of foods.	04
(c) Explain moisture determination methods in food. Compare oven-drying method with infrared moisture balance.	07
Q.2 (a) Classify carbohydrates with suitable examples.	03
(b) Explain the Maillard reaction. How does it affect food quality?	04
(c) Write a note on functional properties of carbohydrates in foods (gelatinization, caramelization, sweetness).	07
OR	
(c) Explain the significance of dietary fibers in human health with suitable examples.	07
Q.3 (a) Define protein denaturation. Give one example from food systems.	03
(b) Describe the role of enzymes in food processing with examples.	04
(c) Discuss the functional properties of proteins (gelation, emulsification, foaming) and their industrial importance.	07
OR	
(a) Explain protein interactions in food systems and their effect on texture and stability.	03
(b) Explain protein denaturation and its impact on food texture.	04
(c) Discuss the industrial importance of enzymes in food processing.	07
Q.4 (a) Define rancidity and mention its types.	03
(b) Write a note on the role of lipids in food texture and flavor.	04
(c) Explain physical and chemical properties of fats and oils. Discuss oxidation and methods to prevent rancidity.	07
OR	
(a) Classify food additives.	03

- (b) Discuss the functions of food additives with examples. 04
- (c) Explain safety concerns associated with food additives. 07
- Q.5** (a) Define food adulteration and give two examples. 03
- (b) Discuss the role of chromatography in food analysis. 04
- (c) Explain nutritional labeling and regulatory standards. How do they ensure consumer safety? 07

OR

- (a) Write short notes on food contaminants and their health effects. 03
- (b) Explain chemical changes during food processing (fermentation, drying, irradiation). 04
- (c) Write a short note on functional foods and nutraceuticals. 07
