

Enrolment No./Seat No _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER– VI EXAMINATION – SUMMER 2026

Subject Code:3161411

Date:01-06-2026

Subject Name:Food Analytical techniques

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.

- Q.1**
- (a) Explain briefly the working principle of atomic absorption spectroscopy. **03**
- (b) State the significance of the following steps in Kjeldahl method of protein analysis: **04**
- i) Sample Digestion
- ii) Sample Distillation
- (c) Write short notes on: **07**
- i) Codex Alimentarius Commission
- ii) American Oil Chemists' Society (AOCS)
- Q.2**
- (a) State the principle involved in Soxhlet method of fat estimation. **03**
- (b) Discuss the factors considered for selection of food analytical methods. **04**
- (c) Define gas chromatography. Draw well labelled block diagram of gas chromatography and write in detail about carrier gases used in gas chromatography. **07**
- OR**
- (c) Give classification of paper chromatography and explain classification based on developing techniques. **07**
- Q.3**
- (a) Highlight on the effect of molecular size and medium pH on the movement of charged particle during electrophoresis. **03**
- (b) Define thin layer chromatography and mention the applications of thin layer chromatography in food analysis. **04**
- (c) Write down the importance of ash in food analysis and describe the principle and instrumentation involved in determination of ash. **07**
- OR**
- Q.3**
- (a) How Flame atomization works in Atomic Absorption Spectroscopy. **03**
- (b) Describe the sampling unit of gas chromatography. **04**

	(c) Explain the steps involved in the preparation of a sample for solvent extraction method.	07
Q.4	(a) Differentiate between wet ashing and dry ashing.	03
	(b) What are the factors affecting the choice of sampling plans?	04
	(c) Give block diagram of HPLC system and describe solvent delivery system of HPLC.	07
	OR	
Q.4	(a) Write down the procedure for determination of milk fat by Gerber's method.	03
	(b) Define sampling and discuss the various purposes of sampling.	04
	(c) Describe the principles of thin layer chromatography.	07
Q.5	(a) List out the different components of pH meter and state each component functions.	03
	(b) Comment on Electrochemical detectors used in HPLC.	04
	(c) Explain the principle and procedure followed in Lowry Method for protein analysis.	07
	OR	
Q.5	(a) State the working principle of pH meter.	03
	(b) Write short note on preparation of TLC plates.	04
	(c) Discuss reagents required, principle involved and procedure followed in Somogyi-Nelson Method for carbohydrate analysis.	07
