Seat No./Enrollment No.: _____

GUJARAT TECHNOLOGICAL UNIVERSITY
BACHELOR OF ENGINEERING – SEMESTER 6 – EXAMINATION – SUMMER 2026

Subject Code: 3165102 **Date: 22/05/2026**

Subject Name: RECENT ADVANCES IN FRUITS AND VEGETABLE PROCESSING

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)**	Define post-harvest physiology and state its importance in fruits and vegetables.	**03**
	(b)	Explain respiration rate and ethylene production in fruits during ripening.	**04**
	(c)	Discuss the different stages of fruit ripening and their control through temperature and chemicals.	**07**
Q.2	**(a)**	Explain the principle and process of blanching in fruit and vegetable preservation.	**03**
	(b)	Discuss the thermal processing methods used in fruit juice preservation.	**04**
	(c)	A fruit pulp is heated from 25°C to 95°C in 10 minutes. Calculate the rate of heating °C/min and comment on process efficiency.	**07**
		OR	
Q.2	**(c)**	Describe the role of pasteurization and sterilization in improving shelf life of fruit beverages.	**07**
Q.3	**(a)**	Define minimal processing. Give two examples of minimally processed products.	**03**
	(b)	Explain the function and importance of packaging gases in modified atmosphere packaging MAP.	**04**
	(c)	Discuss recent developments in edible coatings and biodegradable packaging for fruits and vegetables.	**07**
		OR	
Q.3	**(a)**	Explain vacuum packaging and its effect on shelf life.	**03**
	(b)	Describe the working of controlled atmosphere storage systems.	**04**
	(c)	Compare MAP and active packaging with examples from fruit industry.	**07**
Q.4	**(a)**	Define non-thermal processing. Give two advantages over conventional heating.	**03**
	(b)	Explain the principle and application of pulsed electric field PEF processing in fruit juice preservation.	**04**
	(c)	Describe high pressure processing HPP technology with process parameters and its effect on nutritional quality.	**07**
		OR	
Q.4	**(a)**	Explain the principle of ohmic heating and its advantages in fruit puree processing.	**03**
	(b)	Discuss the working of microwave-assisted drying of fruits.	**04**

	(c)	Write a short note on UV and ozone treatment for fruits and vegetables.	**07**
Q.5	**(a)**	List different quality parameters used for fruits and vegetables.	**03**
	(b)	Explain the microbiological aspects related to post-harvest spoilage.	**04**
	(c)	Discuss the utilization of fruit and vegetable processing by-products for value-added products.	**07**

OR

Q.5	**(a)**	Define sensory evaluation. Explain its importance in product development.	**03**
	(b)	Explain the nutritional and functional properties of fruit powders.	**04**
	(c)	Describe the importance of cold chain management in maintaining fruit and vegetable quality.	**07**

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