Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER–V (NEW) EXAMINATION – WINTER 2024

Subject Code:3155102 Date:25-11-2024

Subject Name:Food Drying, Dehydration and Preservation

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 drying and explain the need for moisture removal from food.	03
	(b)	Compare the different models used for EMC determination. How do these models impact the drying process?	04
	(c)	What is equilibrium moisture content (EMC)? List the methods used to determine EMC.	07
Q.2	**(a)**	Describe the constant and falling rate periods of drying.	03
	(b)	List the classification criteria for dryers.	04
	(c)	Name three types of dryers and mention their specific applications in the food industry.	07
		OR	
	(c)	Explain how spray drying is different from freeze drying.	**07**
Q.3	**(a)**	Define re-hydration ratio and its significance in food drying.	**03**
	(b)	Discuss the impact of water activity on the shelf life of dried foods.	**04**
	(c)	What are the basic steps in designing a tray dryer?	**07**
		OR	
Q.3	**(a)**	What are the basic concepts of food preservation?	**03**
	(b)	Explain how hybrid dryers improve the drying process.	**04**
	(c)	Analyze the relationship between size, density, and physical characteristics of dried food products. How do these factors affect re-hydration?	**07**
Q.4	**(a)**	List two novel drying techniques.	**03**
	(b)	Discuss the theoretical aspects of drying. Why is understanding thermal properties crucial for food drying?	**04**
	(c)	Create a design for a tray dryer based on the basic design steps provided in class.	**07**
		OR	
Q.4	**(a)**	Write the differences between thin-layer and deep-bed drying methods.	**03**
	(b)	Explain the utilities of drying in food preservation.	**04**
	(c)	Evaluate the environmental impact of super-heated steam drying compared to traditional drying methods.	**07**
Q.5	**(a)**	What are dryer performance indices? Discuss the importance of overall thermal efficiency and specific energy consumption in assessing dryer performance.	**03**
	(b)	Compare capillary theory and diffusion theory in the context of food drying	**04**

	(c)	Describe the methods used for determining moisture content in foods.	**07**

OR

Q.5	**(a)**	Write the drying and dehydration differences	**03**
	(b)	Explain the factors that affect food deterioration.	**04**
	(c)	Assess the quality criteria that should be considered when selecting a dryer for delicate foods.	**07**

****