Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII (NEW) EXAMINATION – WINTER 2022

Subject Code:3170510 Date:10-01-2023

Subject Name:Process Intensification

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)**	Explain in brief Supercritical separation.	**03**
	(b)	Mention history of Process Intensification in brief.	**04**
	(c)	Elaborate the benefits of PI in detail.	**07**
Q.2	**(a)**	Explain Impinging Jets	**03**
	(b)	Explain the concept of dividing wall column in Distillation.	**04**
	(c)	Describe the construction and working of Membrane Enclosed Catalytic Reactor	**07**
		OR	
	(c)	Explain in detail Short Path Distillation	**07**
Q.3	**(a)**	Explain Ejectors in brief.	**03**
	(b)	Explain Synthesis of Methyl Tertiary Butyl Ether	**04**
	(c)	Describe Plate Heat Exchangers in detail	**07**
		OR	
Q.3	**(a)**	Give various definitions of Process Intensification and explain its Interpretations.	**03**
	(b)	Discuss Micro Reactors in detail	**04**
	(c)	Elaborate Rotor Stator Reactor.	**07**
Q.4	**(a)**	Explain the concept of Ultrasound mixers	**03**
	(b)	Explain briefly Catalytic Plate Reactor	**04**
	(c)	Discuss in detail the construction and working of Oscillatory Baffled Reactor	**07**
		OR	
Q.4	**(a)**	Explain the concept of Micro channel Heat Exchanger	**03**
	(b)	Explain barriers and future prospects of Hybrid separation.	**04**
	(c)	Discuss construction, working, advantages and disadvantages of Spinning Disc reactor.	**07**
Q.5	**(a)**	Explain the concept of Integrated Heat Exchangers in separation processes.	**03**
	(b)	Explain the Advantages and Disadvantages of Extractive distillation.	**04**
	(c)	Explain in details Process Intensification toolbox	**07**
		OR	
Q.5	**(a)**	Define and explain Adsorptive membrane and Membrane chromatography.	**03**
	(b)	Explain Coke Gas Purification	**04**
	(c)	Explain Taylor Couette Reactor in detail	**07**

****