Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII (NEW) EXAMINATION – SUMMER 2024

Subject Code: 3170510 Date:22-05-2024

Subject Name: Process Intensification

Time:02:30 PM TO 05:00 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: Process Intensification, Supercritical separation and Extractive Distillation.	**03**
	(b)	Mention advantages of Process Intensification in detail.	**04**
	(c)	Explain in detail Process Intensification toolbox.	**07**
Q.2	**(a)**	Describe the working principle of Spinning Disc Reactor.	**03**
	(b)	Describe the working principle of Catalytic Plate Reactor with example.	**04**
	(c)	Explain Taylor Couette Reactor in detail	**07**
		OR	
	(c)	Discuss Micro Reactors in detail	**07**
Q.3	**(a)**	Explain the principle of Rotor Stator reactor .	**03**
	(b)	Elaborate Rotor Stator Reactor.	**04**
	(c)	Discuss in detail the construction and working of Oscillatory Baffled Reactor.	**07**
		OR	
Q.3	**(a)**	Explain the concept of Ultrasound mixers	**03**
	(b)	Explain Ejectors in brief.	**04**
	(c)	Explain Impinging Jets in detail with appropriate figure.	**07**
Q.4	**(a)**	Explain the concept of Structured reactors.	**03**
	(b)	Discuss Monolith reactor with example.	**04**
	(c)	Describe the construction and working of Membrane Enclosed Catalytic Reactor	**07**
		OR	
Q.4	**(a)**	Explain the concept of Short path distillation.	**03**
	(b)	Explain barriers and future prospects of Hybrid separation.	**04**
	(c)	Explain the working of Extractive distillation with advantages and disadvantages.	**07**
Q.5	**(a)**	Explain Coke Gas Purification	**03**
	(b)	Explain Synthesis of Methyl Tertiary Butyl Ether	**04**
	(c)	Explain Heat Integrated Distillation Train.	**07**
		OR	
Q.5	**(a)**	Explain the concept of Micro channel Heat Exchanger	**03**
	(b)	Explain the concept of Integrated Heat Exchangers in separation processes.	**04**
	(c)	Discuss Printed Circuit Heat Exchanger in detail.	**07**

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