

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE- SEMESTER-VII EXAMINATION – WINTER 2025****Subject Code:3170510****Date:20-11-2025****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
<b>Q.1</b>	(a) Give various definitions of Process Intensification and explain its Interpretations.	<b>03</b>
	(b) Mention advantages of Process Intensification in detail.	<b>04</b>
	(c) Explain the history of Process Intensification in brief.	<b>07</b>
<b>Q.2</b>	(a) Describe the working principle of Spinning Disc Reactor.	<b>03</b>
	(b) Differentiate: Conventional reactor and Micro reactor	<b>04</b>
	(c) Explain in detail Short Path Distillation	<b>07</b>
	<b>OR</b>	
	(c) Explain in details Process Intensification toolbox	<b>07</b>
<b>Q.3</b>	(a) Define: Static mixers	<b>03</b>
	(b) Explain the role of Ejectors as mixers.	<b>04</b>
	(c) Explain Taylor Couette Reactor in detail	<b>07</b>
	<b>OR</b>	
<b>Q.3</b>	(a) Explain the principle of Rotor Stator reactor .	<b>03</b>
	(b) Explain Coke Gas Purification	<b>04</b>
	(c) Discuss construction, working, advantages and disadvantages of Spinning Disc reactor.	<b>07</b>
<b>Q.4</b>	(a) Define and explain Membrane chromatography.	<b>03</b>
	(b) Explain the concept of Ultrasound mixers	<b>04</b>
	(c) Explain Printed Circuit board Heat exchangers.	<b>07</b>
	<b>OR</b>	
<b>Q.4</b>	(a) Explain the concept of Integrated Heat Exchangers in separation processes.	<b>03</b>
	(b) Explain in brief Supercritical separation.	<b>04</b>
	(c) Discuss in detail the construction and working of Oscillatory Baffled Reactor.	<b>07</b>
<b>Q.5</b>	(a) Define and explain Adsorptive membrane and Membrane chromatography.	<b>03</b>
	(b) Explain Synthesis of Methyl Tertiary Butyl Ether	<b>04</b>
	(c) Explain Impinging Jets in detail with appropriate figure.	<b>07</b>
	<b>OR</b>	
<b>Q.5</b>	(a) Explain the concept of Micro channel Heat Exchanger	<b>03</b>
	(b) Explain barriers and future prospects of Hybrid separation.	<b>04</b>
	(c) Describe the construction and working of Membrane Enclosed Catalytic Reactor	<b>07</b>

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