

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-III EXAMINATION – SUMMER 2025****Subject Code:3131306****Date:31-05-2025****Subject Name:Unit Operations & Processes in Chemical Industries****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: Unit Process and give example thereof.	03
	(b) Enlist the non-fertilizer uses of Urea.	04
	(c) Explain with a neat process flow diagram Nitric acid manufacturing.	07
Q.2	(a) Explain health and safety aspects involved with Aniline manufacturing.	03
	(b) Differentiate between Distillation and Extraction.	04
	(c) Explain in detail major engineering problems involved during the hydrogenation of vegetable oil.	07
	OR	
	(c) Draw only a neat flow diagram of the hydrogenation of vegetable oil.	07
Q.3	(a) With the help of the schematic representation explain in brief size reduction.	03
	(b) Explain health and safety aspects related with Phenol.	04
	(c) Explain production of Ethylene Chlorohydrin.	07
	OR	
Q.3	(a) With the help of the schematic representation explain in brief Evaporation.	03
	(b) Explain how problem of formation of Iron Carbonyl is solved during methanol production.	04
	(c) Explain production of Vinyl Chloride	07
Q.4	(a) Enlist the principal processes used for manufacturing Ethanol.	03
	(b) Discuss sources of Pollution for Urea manufacturing.	04
	(c) Explain health and safety aspects related with Hydrogen Cyanide.	07
	OR	
Q.4	(a) Enlist the uses of Phenol.	03
	(b) Discuss sources of Pollution for acetic acid manufacturing.	04
	(c) Explain health and safety aspects related with Vinyl Chloride.	07
Q.5	(a) State material of constructions for corrosive environment for reactors.	03
	(b) Explain major engineering problems encountered during the hydrogenation of vegetable oil.	04
	(c) Prepare summary of all the major reactions involved in Phenol production	07

OR

- Q.5**
- (a)** Discuss the term MSDS. **03**
 - (b)** Discuss the major engineering problems involved in Urea manufacturing. **04**
 - (c)** Show the active catalyst preparation with the help of reactions for hydrogenation unit process. **07**
