

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-III(NEW) EXAMINATION – SUMMER 2023****Subject Code:3131306****Date:28-07-2023****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) Differentiate between unit operation & unit process.	03
	(b) Explain the working principle of Distillation & Evaporation as unit operations.	04
	(c) Draw a manufacturing flow diagram of nitric acid & explain its manufacturing process.	07
Q.2	(a) Draw a line diagram of liquid – liquid extraction operation.	03
	(b) Enlist the types of adsorbers used in chemical industry & draw a neat sketch of anyone.	04
	(c) Draw a manufacturing flow diagram of Monochloroacetic acid production & identify the sources of pollution.	07
	OR	
	(c) Draw a manufacturing flow diagram of urea production & identify the sources of pollution.	07
Q.3	(a) Name the various factors affecting stripping operation & discuss each in detail.	03
	(b) Discuss the health & safety aspects during cotton seed manufacturing.	04
	(c) Write down the manufacturing process of acetic acid along with chemical reactions.	07
	OR	
Q.3	(a) Explain the factors influencing the rate of evaporation.	03
	(b) Discuss the health & safety aspects during furfural manufacturing.	04
	(c) Write down the manufacturing process of vinyl acetate along with chemical reactions.	07
Q.4	(a) Highlight the application of crystallization operation.	03
	(b) Differentiate between absorption & adsorption operations.	04
	(c) Write a short note on Phenol manufacturing process.	07
	OR	
Q.4	(a) Highlight the application of crystallization unit operation in various chemical industries.	03
	(b) List down the selection criteria for solvent in extraction operation.	04
	(c) Write a short note on methanol manufacturing process.	07
Q.5	(a) Write down the full form of MSDS & purpose of it.	03
	(b) Differentiate between physical & chemical adsorption	04
	(c) Write down the manufacturing process of Ethylene from ethanol via sulfonation route along with chemical equations.	07
	OR	
Q.5	(a) Define the hydrolysis process.	03
	(b) Differentiate between batch distillation & continuous distillation.	04
	(c) Explain the significance of this subject in environmental engineering branch.	07

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