

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER- III (New) EXAMINATION – WINTER 2019

Subject Code: 3131306

Date: 30/11/2019

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.

	Marks
Q.1 (a) Define the following terms: 1. Halogenation 2. Nitrification 3. Sulfonation	03
(b) Differentiate between Unit Operation & Unit Process.	04
(c) Describe the working principle, construction and uses of Absorption Tower with neat sketch.	07
Q.2 (a) How to identify the sources of pollution for any process?	03
(b) Define: MSDS. Describe the significance of MSDS.	04
(c) Identify the Unit Operation and Unit Process for the Ethanol with neat sketch of process flow diagram.	07
OR	
(c) Identify the Unit Operation and Unit Process for the Vinyl Chloride with neat sketch of process flow diagram.	07
Q.3 (a) Enlist the applications of Nitric Acid.	03
(b) Describe the sources of pollution for Vinyl Chloride process.	04
(c) Describe the manufacturing process of Hydrogen Cyanide with neat sketch of process flow diagram.	07
OR	
Q.3 (a) Enlist the applications of Urea.	03
(b) Describe the sources of pollution for Acetic Acid process.	04
(c) Describe the manufacturing process of Urea with neat sketch of process flow diagram.	07
Q.4 (a) Write down the reaction Chemistry for Nitric Acid.	03
(b) Discuss the health and safety measures for process of Cotton Seed Oil.	04
(c) Describe the construction, working principle and uses of Heat Exchanger with neat sketch.	07
OR	
Q.4 (a) Write down the reaction Chemistry for Ethanol.	03
(b) Discuss the health and safety measures for process of Cellulose Acetate.	04
(c) Describe the construction, working principle and uses of Stripping Tower with neat sketch.	07

- Q.5** (a) Define the following terms: **03**
1. Boiling Point 2. Melting Point 3. Specific Gravity
- (b) Identify the sources of pollution for process of Aniline. **04**
- (c) Define: Hydrolysis. Describe the manufacturing process of Furfural with neat sketch of process flow diagram. **07**

OR

- Q.5** (a) Discuss the First Aid measures for Ethanol. **03**
- (b) Identify the sources of pollution for process of Ethylene Chloro Hydrin. **04**
- (c) Define: Esterification. Describe the manufacturing process of Vinyl Acetate with neat sketch of process flow diagram. **07**

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