

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-III (NEW) EXAMINATION – WINTER 2023

Subject Code:3131306

Date:18-01-2024

Subject Name:Unit Operations & Processes in Chemical Industries

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.

- Q.1** (a) Define the following terms: **03**
Esterification, Hydrolysis, Oxidation.
- (b) Differentiate between Unit Operation and Unit Process. **04**
- (c) Discuss the significance of this subject in Environmental Engineering. **07**
- Q.2** (a) Define the terms. Nitrification and Denitrification. **03**
- (b) Discuss the sources of pollution for Nitric Acid. **04**
- (c) Describe the manufacturing process of Nitric Acid with process flow diagram. **07**
- OR**
- (c) Describe the manufacturing process of Aniline with process flow diagram. **07**
- Q.3** (a) Enlist the Unit Operation and Unit Process utilized in Ethanol. **03**
- (b) Explain any TWO Unit Processes used for manufacturing of Ethanol in detail. **04**
- (c) Discuss the sources of pollution and safety measures for Ethanol. **07**
- OR**
- Q.3** (a) Enlist the Unit Operation and Unit Process utilized in Ethylene Chlorohydrin. **03**
- (b) Explain any TWO Unit Processes used for manufacturing of Ethylene Chlorohydrin in detail. **04**
- (c) Discuss the sources of pollution and safety measures for Ethylene Chlorohydrin. **07**
- Q.4** (a) Define the term MSDS. List the information provided in the MSDS. **03**
- (b) Explain any ONE Unit Process and ONE Unit Operation used for manufacturing of Vinyl Chloride in detail. **04**
- (c) Discuss the sources of pollution and safety measures for Vinyl Chloride. **07**
- OR**
- Q.4** (a) Differentiate between Incineration and Pyrolysis. **03**
- (b) Define the term Amination. Draw a block diagram of process flow for Aniline. **04**
- (c) Discuss the sources of pollution and safety measures for Aniline. **07**
- Q.5** (a) Explain the Hydrolysis process in detail. **03**
- (b) Explain the process description of Aniline. **04**
- (c) Explain the Principle, Construction and working, Types of Heat Exchanger with its applications. **07**

OR

- Q.5** (a) Describe the uses of Urea. **03**
(b) Define the term Ammonolysis. Draw a block diagram of process flow for Hydrogen Cyanide. **04**
(c) Explain the Principle, Construction and working, Types of Stripping column with its applications. **07**
