

Enrollment No./Seat No.:

GUJARAT TECHNOLOGICAL UNIVERSITY
Bachelor of Engineering - SEMESTER - V EXAMINATION - WINTER 2025

Subject Code: N115AA02

Date: 08-12-2025

Subject Name: Safety in Chemical Industry

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
Q.1 (a) Enlist type of hazard in chemical industries.	03
(b) Explain hazard due to fire and explosion.	04
(c) Justify need of process flow chart and its importance in safety inspection.	07
Q.2 (a) Enlist hazardous properties of ethylene oxide (EO).	03
(b) Explain safe unloading procedure for storage tank.	04
(c) Compare and justify the selection of appropriate pressure relive devices based on the type of tank, stored substance, and operating conditions.	07
OR	
(c) Evaluate the safety preparedness of an LPG storage facility with reference to its fire protection systems, leak detection, and emergency response infrastructure.	07
Q.3 (a) Enlist safety features of DCS system.	03
(b) Explain in brief about solvent distillation.	04
(c) Illustrate the use of various control devices in controlling hazards during industrial processes.	07
OR	
(a) Define runaway reaction with suitable examples.	03
(b) Explain safe design of process vessel.	04
(c) Apply appropriate sampling and analysis methods to control process hazards in chemical industries.	07
Q.4 (a) What are the different steps involved to prevent and control explosion?	03
(b) When transporting the chemicals, explain Emergency actions need to be apply in case of "toxic release" and in case of "flammable chemicals".	04
(c) Analyze the process of identifying and assessing reactive hazards using a step-by-step flowchart.	07

OR

- (a) Define : Detonation and deflagrations. 03
 - (b) Explain a method used for prevent pressure piling. 04
 - (c) Compare the TNO Multi-Energy Model with the TNT Equivalent Model. 07
- Q.5**
- (a) List out check list for routine inspection. 03
 - (b) Write any three color code for pipeline. 04
 - (c) Explain how Safe start up and shut down procedures importance in chemical industry with a suitable example. 07

OR

- (a) List out check list for break down maintenance. 03
- (b) List out the precautions and safety checklist for transporting hazardous/toxic and flammable chemicals. 04
- (c) How can you prevent hazard condition in equipment by applying the concept of corrosion and erosion. 07
