

**VIT**Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

REG.NO.:

SCHOOL OF CHEMICAL ENGINEERING
CONTINUOUS ASSESSMENT TEST -I
FALL SEMESTER 2025-2026

SLOT: F2+TF2

Programme Name & Branch : B.Tech (Chemical Engineering)
 Course Code : BCHE318L
 Course Name : Safety and Hazard Analysis
 Faculty Name(s) : Dr. A. Babu Ponnusami
 Class Number(s) : VL2025260103959
 Date of Examination : 22-08-25
 Exam Duration : 90 minutes
 Maximum Marks: 50

General instruction(s): NIL

M - Max mark; CO – Course Outcome; BL – Blooms Taxonomy Level (1 – Remember, 2 – Understand, 3 – Apply, 4 – Analyse, 5 – Evaluate, 6 – Create)

Course Outcomes:

CO1: Develop the work safety protocols for the individual tasks.

CO2: Implement safety framework at the workplace.

Answer all the Questions. (5 x 10 = 50 Marks)

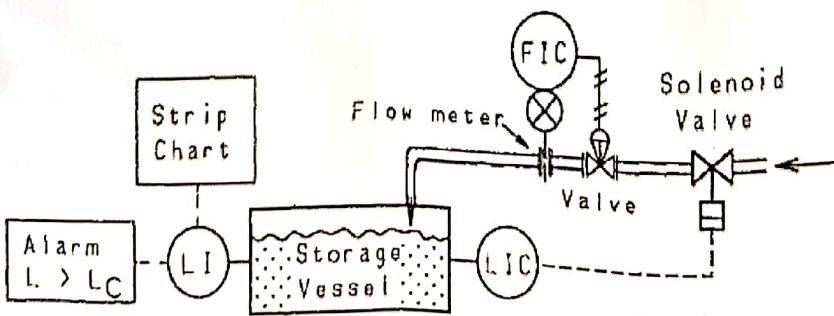
S.No	Question	M	Course Outcome	B L
1	Discuss in detail about Behavior Based Safety in chemical process industries with neat flow-chart.	10	CO1	2
2	A job safety analysis (JSA) is a procedure which helps integrate accepted safety and health principles and practices into a particular task or job operation. In a JSA, each basic step of the job is to identify potential hazards and to recommend the safest way to do the job. Perform Job Safety Analysis for the cleaning up an unknown chemical release or unknown abandoned material in to the floor using floor cleaning machine.	10	CO1	3
3	Describe the process of Event Tree Analysis. The storage tank system shown in Figure is used to store process feedstock. Overfilling of storage tanks is a common problem in the process industries. To prevent overfilling, the storage tank is equipped with a high-level alarm and a high-level shutdown system. The high-level shutdown system is connected to a solenoid valve that stops the flow of input stock. Develop an event tree for this system using the "failure of level indicator" as the initiating event. Given that the level indicator fails 4 times/yr, estimate the number of overflows expected per year. 	10	CO2	4

Fig. Level control system with alarm.

**VIT**Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

REG.NO.:

SCHOOL OF CHEMICAL ENGINEERING
CONTINUOUS ASSESSMENT TEST -I
FALL SEMESTER 2025-2026

SLOT: F2+TF2

Use the following data:				
System		Failures/demand		
High level alarm		0.01		
Operator stops flow		0.1		
High level switch system		0.01		
4	Training programs with respect to industrial safety differ according to the hierarchy. Explain various levels of training program required in chemical process industries.	10	CO2	3
5	Accident report and investigation procedure is useful to prevent accident in future. Discuss about how accidents in industries reported, investigated and analyzed. How does it help in prevention of future accidents in industries?	10	CO2	3

----- All the Best -----