

Register No.: ..... Name: .....

**SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)**

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

**SIXTH SEMESTER B.TECH DEGREE EXAMINATION (R), MAY 2024****(2020 SCHEME)****Course Code : 20CHT382****Course Name: Hazard and Risk Assessment****Max. Marks : 100****Duration: 3 Hours****PART A*****(Answer all questions. Each question carries 3 marks)***

1. Define (i) Hazard (ii) Risk (iii) Accident.
2. Explain briefly (i) Threshold limit values (ii) short term exposure limit.
3. Write a note on Mond Index.
4. Explain ALARP triangle.
5. Define Process Hazard Analysis (PHA).
6. List the guide words used for HAZOP procedure.
7. Differentiate UFL and LFL.
8. Explain methods for the prevention of BLEVE in process plants.
9. Enumerate the steps involved in risk assessment.
10. Differentiate individual and societal risk.

**PART B*****(Answer one full question from each module, each question carries 14 marks)*****MODULE I**

11. Explain in detail about the classification of hazards in chemical process industries. (14)

**OR**

12. a) Explain the consequences of radiation hazards. (7)
- b) Explain the major consequences of explosion hazards. (7)

**MODULE II**

13. Write a note on (i) Bhopal Gas Tragedy (ii) Flixborough Disaster. (14)

**OR**

14. Explain in detail (i) Fire and Explosion Index (ii) Toxicity Index. (14)

**MODULE III**

15. Elaborate (i) Layer of Protection Analysis (LOPA) (ii) Fault Tree Analysis (FTA). (14)

**OR**

16. Explain (i) Bow-tie Analysis (ii) Failure Mode and Effect Analysis. (14)

**MODULE IV**

17. a) Enumerate different steps involved in pool modelling. (6)  
b) Explain the criteria for the selection of release incidents. (8)

**OR**

18. a) Describe the salient features of discharge rate models used for consequence modelling. (7)  
b) List and explain the steps involved in fire and explosion modelling. (7)

**MODULE V**

19. Explain the significance of Probit functions in risk assessment with suitable example. (14)

**OR**

20. Explain the importance of Emergency planning in process industries and detail its procedure and scope. (14)

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