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Open Elective-II: CH-380

Roll no. 230



National Institute of Technology, Hamirpur
Chemical Engineering Department
B. Tech. 3rd Year (Semester VI)

End Semester Theory Examination (May, 2023)

Open Elective - II: CH - 380; Industrial Safety and Hazard Management

Duration: 3 Hours

Max. Marks: 50

Note: This question paper consists of five questions and one page.

- Attempt all the questions. All parts of a question must be answered at one place.
- Assume appropriate data wherever necessary

- (a) What is meant by inherent safety? Explain the various types of inherent safety techniques used in the chemical industry. [4]
 - (b) What are process hazards checks? How are they useful in identifying hazards? [3]
 - (c) Discuss in detail the Bhopal gas tragedy incident, including the following points. (i) the cause of the incident; (ii) toxic component release; and (iii) environmental impact. [3]
- (a) What is meant by industrial hygiene? What are the various industrial hygiene control techniques used in the chemical industry? [4]
 - (b) Explain the Threshold limit values, TLV-TWA, TLV-STEL and TLV -C. [3]
 - (c) Write short notes on any two of the following: [3]
 - (i) Respirators,
 - (ii) Occupational related diseases,
 - (iii) Carcinogens entry into human systems
- (a) Describe the two probabilistic methods (Event and Fault tree) with suitable example of any chemical process. Also, list the advantages and disadvantages of these methods. [4]
 - (b) Illustrate by means of suitable example, hazard identification and risk assessment procedure for a chemical process [3]
 - (c) What are the different types of hazard involved in ammonia manufacturing facility with natural gas as the raw material? List them. [3]
- (a) What is the Workman compensation Act, and what are its main features? Also, describe the possible reasons why the employee may not be compensated. [5]
 - (b) Discuss the objective and scope of the Factories Act 1948 and briefly enumerate provisions of the Act ensuring health and welfare of the workers in a factory. [5]
- (a) Discuss the importance of safety training methods. [5]
 - (b) Explain in details the role of government agencies and private consulting agencies in safety training programs. [5]