

**MASTER OF SCIENCE
(INDUSTRIAL SAFETY) (MSCIDS)
Term-End Examination
June, 2026**

**MIS-032 : RISK ASSESSMENT AND
VULNERABILITY**

Time : 3 Hours

Maximum Marks : 70

Note : (i) Answer any **seven** questions.

(ii) All questions carry equal marks.

1. (a) What are the different categories of risk assessment ? Explain briefly any *one* category. 5
- (b) What is the difference between hazard and operability issue in the context of a Hazard and Operability (HAZOP) studies ? 5

2. (a) Why is it important to identify minimal cut sets in Fault Tree Analysis (FTA) ? 5
(b) Explain how individual and societal risks differ in vulnerability analysis with suitable examples. 5
3. (a) Define risk assessment and explain its significance in workplace safety. 5
(b) Explain the purpose of Event Tree Analysis (ETA). How is it used in assess the adequacy of safety systems. 5
4. (a) What is risk communication ? Why is it important in the context of risk analysis and management ? 5
(b) How can organizations use Cost-Benefit Analysis (CBA) to implement risk mitigation measures ? 5
5. (a) What is Risk Mapping ? State the difference between on-site emergency and off-site emergency plans. 5

- (b) Explain the process safety management with use of OSHA standards. 5
6. (a) Explain the role of the National Disaster Management Act, 2005 in industrial safety. 5
- (b) What are the methods available for performing hazard identification and risk assessment ? Explain briefly any one method. 5
7. (a) What are safety management systems ? List out the key components. 5
- (b) How the Real-Time Artificial Intelligence (AI) techniques help in work place safety management ? Explain briefly. 5
8. (a) How the failure of Permit-to-work system contributed to the Piper Alpha Tragedy ? Explain briefly. 5
- (b) How can risk assessment be used to proactively identify and address potential hazards in industrial operations ? 5

9. Write short notes on any *four* of the following : 4×2.5=10

- (a) Difference between risk and hazard
- (b) Tools for risk evaluation process
- (c) Risk management model
- (d) National Fire Protection Association (NFPA)
- (e) Safety Assurance

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