C–5613	Sub. Code
	50121

DIPLOMA EXAMINATION, APRIL 2025

Second Semester

Fire and Industrial Safety Management

HAZARD IDENTIFICATION, RISK ASSESSMENT AND RISK CONTROL

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A $(10 \times 1 = 10)$

Answer **all** questions.

1. Which of the following is NOT a component of a Risk Register?

   (a) Hazard description

   (b) Risk mitigation strategies

   (c) Employee attendance records

   (d) Risk probability and impact

2. What does ALARP stand for in risk assessment?

   (a) As Low As Reasonably Possible

   (b) Always Limit And Reduce Peril

   (c) Absolute Lowest Achievable Risk Point

   (d) Acceptable Level And Risk Percentage

3. Which analysis method focuses on identifying the underlying causes of an incident or near-miss?

(a) Job Safety Analysis (JSA)

(b) Root Cause Analysis (RCA)

(c) Risk-Benefit Analysis

(d) Cost-Benefit Analysis

4. What is the primary goal of Risk Analysis?

(a) To eliminate all risks

(b) To prioritize and manage risks effectively

(c) To create a comprehensive list of all possible hazards

(d) To calculate the exact financial impact of each risk

5. Which tool uses a structured brainstorming approach to identify potential hazards and operational issues?

(a) Hazard and Operability Study (HAZOP)

(b) Fault Tree Analysis (FTA)

(c) Failure Mode and Effects Analysis (FMEA)

(d) Event Tree Analysis (ETA)

6. FMEA is primarily used for

(a) Analyzing the causes of past accidents

(b) Assessing the potential failure modes of a system or process

(c) Determining the root cause of an incident

(d) Evaluating the effectiveness of safety measures

7. What is the primary objective of a Hazard Identification and Risk Assessment (HIRA) study?

(a) To create a detailed project timeline

(b) To identify and assess potential hazards to determine appropriate control measures

(c) To calculate the exact financial cost of accidents

(d) To train employees on emergency procedures

8. The Risk Matrix is a tool used to

(a) Calculate the probability of an earthquake

(b) Estimate the financial impact of a risk

(c) Visualize and prioritize risks based on their likelihood and severity

(d) Determine the best safety equipment for a specific task

9. Which major industrial disaster highlighted the importance of process safety and risk management in the chemical industry?

(a) Mexico City Disaster

(b) Bhopal Disaster

(c) Seveso Disaster

(d) Feyzin Disaster

10. What is the primary purpose of analyzing past accidents in risk assessment?

(a) To assign blame for the accidents

(b) To learn from previous incidents and prevent future ones

(c) To create a historical record of all accidents

(d) To calculate insurance premiums

Part B $(5 \times 5 = 25)$

Answer **all** questions, choosing either (a) or (b).

11. (a) Define hazard and risk, and explain their relationship.

Or

(b) Explain the concept of "horseplay" as a hazardous event.

12. (a) Describe the steps involved in the Risk Analysis Process.

Or

(b) Compare and contrast Risk-Benefit Analysis and Cost-Benefit Analysis.

13. (a) Explain the HAZOP methodology and its benefits in identifying potential hazards and operational issues.

Or

(b) Compare and contrast Fault Tree Analysis (FTA) and Event Tree Analysis (ETA).

14. (a) Discuss the steps involved in conducting a comprehensive hazard identification and risk assessment (HIRA) study.

Or

(b) What is the importance of Specific Site Assessment in risk management?

15. (a) Discuss the Bhopal Disaster (1984) as a case study in risk assessment.

Or

(b) Describe the Flixborough disaster and its impact on risk assessment practices.

Part C $(5 \times 8 = 40)$

Answer **all** questions, choosing either (a) or (b).

16. (a) Discuss the concept of "unsafe acts" and "unsafe conditions" in the context of hazard identification.

Or

(b) Explain the concept of Human Error Analysis (HEA) in risk assessment.

17. (a) Discuss the various techniques used to identify risks, such as brainstorming, checklists, hazard and operability studies.

Or

(b) Discuss the benefits of conducting a Risk Analysis with a case study.

18. (a) Explain how the Risk Priority Number (RPN) is calculated and Provide examples of FMEA applications in different industries.

Or

(b) Differentiate qualitative and quantitative risk assessment in FMEA.

19. (a) Discuss the challenges associated with identifying hazards in complex systems.

Or

(b) Discuss the importance of reporting, implementation, monitoring, and reviewing in HIRA.

20. (a) Discuss how past accident analysis can be used as information sources for hazard analysis.

Or

(b) Analyze the Feyzin disaster and its significance in pipeline safety.

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C–5614	Sub. Code 50122

DIPLOMA EXAMINATION, APRIL 2025

Second Semester

Fire and Industrial Safety Management

SAFETY INSPECTION AND AUDIT

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A $(10 \times 1 = 10)$

Answer **all** the questions.

1. What is the primary purpose of a workplace safety inspection?

   (a) To identify and assess potential hazards

   (b) To punish employees for unsafe behavior

   (c) To create a comprehensive safety manual

   (d) To fulfill legal requirements without practical action

2. Which of the following is NOT a typical responsibility of a safety inspection team?

   (a) Observing work practices and procedures

   (b) Reviewing safety records and documentation

   (c) Conducting disciplinary actions for violations

   (d) Recommending corrective measures for identified hazards

3. What is a key difference between a safety inspection and a safety audit?

(a) Inspections are more frequent, while audits are more in-depth

(b) Inspections focus on physical hazards, while audits focus on documentation

(c) Inspections are mandatory, while audits are voluntary

(d) There is no difference; the terms are interchangeable

4. What is the main objective of a safety audit?

(a) To identify and assess the strengths and weaknesses of a safety management system

(b) To punish companies for non-compliance with regulations

(c) To replace the need for regular safety inspections

(d) To create unnecessary paperwork for the organization

5. What is the central focus of ISO 45001?

(a) Environmental sustainability

(b) Occupational health and safety management systems

(c) Quality management in manufacturing

(d) Financial risk management

6. The Plan-Do-Check-Act (PDCA) cycle is a fundamental principle of ISO 45001. What does the "Check" stage involve?

(a) Setting objectives and targets for safety performance

(b) Implementing safety measures and controls

(c) Monitoring and measuring safety performance against objectives

(d) Reviewing and improving the overall safety management system

7. What is the primary focus of ISO 14001?

(a) Occupational health and safety management

(b) Quality management systems

(c) Environmental management systems

(d) Supply chain management

8. Which of the following is NOT a key principle of ISO 14001?

(a) Continual improvement

(b) Pollution prevention

(c) Zero environmental impact

(d) Legal compliance

9. What is the purpose of an Environmental Impact Assessment (EIA)?

(a) To predict the potential environmental effects of a proposed project or development

(b) To punish companies for past environmental damage

(c) To create unnecessary delays in project implementation

(d) To provide legal justification for environmentally harmful activities.

10. Which ISO standard provides guidelines for Life Cycle Assessment (LCA)?

(a) ISO 14001 (b) ISO 14020

(c) ISO 14040 (d) ISO 14024

Part B ($5 \times 5 = 25$)

Answer **all** questions, choosing either (a) or (b).

11. (a) Briefly outline the steps involved in planning an effective workplace inspection.

Or

(b) What information should be included in an inspection report, and how should findings be communicated?

12. (a) Differentiate between the various types of safety audits.

Or

(b) What are the pre-audit activities that need to be undertaken?

13. (a) What are the key elements of leadership and worker participation in ISO 45001?

Or

(b) What are the success factors for implementing an effective OH and S Management System?

14. (a) Explain the concept of an Environmental Management System (EMS) and its benefits.

Or

(b) How does ISO 14001 contribute to environmental sustainability?

15. (a) Explain the general principles and stages of Life Cycle Assessment (LCA) as per ISO 14040.

Or

(b) Discuss the scope and benefits of an environmental Impact Statement (EIS).

Part C ($5 \times 8 = 40$)

Answer **all** questions, choosing either (a) or (b).

16. (a) Explain the concept of 'near-miss' incidents and their significance in workplace inspections.

Or

(b) Discuss the importance of considering human factors during inspections and how to address them.

17. (a) Discuss the importance of interviewing employees during a safety audit.

Or

(b) Discuss the challenges and limitations associated with safety audits.

18. (a) Elaborate on the terms and definitions used in ISO 45001.

Or

(b) Explain the importance of emergency preparedness and response in OHSMS.

19. (a) Describe the three levels of documentation for an ISO 14001-based EMS.

Or

(b) Discuss the process of 'management review' in the context of ISO 14001.

20. (a) Explain the concept of 'product Environmental Footprint' (PEF) and its relevance.

Or

(b) Discuss the importance of public participation in EIA.

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