

C-7379

Sub. Code

90711

P.G. DIPLOMA EXAMINATION, NOVEMBER 2025

First Semester

Fire and Industrial Safety

**FIRE SAFETY – DESIGN, INSTALLATION AND
MAINTENANCE**

(2023 onwards)

Duration : 3 Hours

Maximum : 75 Marks

Part A

(10 × 1 = 10)

Answer **all** questions.

1. The process of smothering a fire by removing its oxygen supply is known as
 - (a) Cooling
 - (b) Fuel Removal
 - (c) Oxygen Deprivation
 - (d) Suffocation
2. Which organization is responsible for setting standards related to fire safety in the United States?
 - (a) NFPA (National Fire Protection Association)
 - (b) OSHA (Occupational Safety and Health Administration)
 - (c) FEMA (Federal Emergency Management Agency)
 - (d) CDC (Centers for Disease Control and Prevention)

3. Sand and water bucket technique is primarily used for:
 - (a) Electrical fires
 - (b) Flammable liquid fires
 - (c) Metal fires
 - (d) Class A fires

4. Active fire protection systems typically involve:
 - (a) Fire-resistant materials
 - (b) Manual fire suppression methods
 - (c) Automated systems for fire detection and suppression
 - (d) Structural elements designed to withstand fire

5. Fire water storage tanks for hydrant systems typically have specifications regarding
 - (a) Color coding
 - (b) Location of emergency exits
 - (c) Capacity and material construction
 - (d) Pressure rating

6. Which type of fire sprinkler system requires a detection system to activate the sprinklers?
 - (a) Wet pipe system
 - (b) Dry pipe system
 - (c) Foam sprinkler system
 - (d) Deluge sprinkler system

7. The basics of fire brigade training typically include:
 - (a) First aid procedures
 - (b) Use of personal protective equipment
 - (c) Fire detection techniques
 - (d) Firefighting tactics and equipment operation

8. Foam flooding systems are commonly used in facilities where:
 - (a) Delicate electronics are present
 - (b) Water damage must be minimized
 - (c) Rapid evacuation is not feasible
 - (d) Fire risk is low

9. Emergency lights are installed as part of a fire alarm system to:
 - (a) Illuminate pathways for safe evacuation during power outages
 - (b) Alert occupants of a fire emergency
 - (c) Activate sprinkler systems
 - (d) Communicate with firefighters

10. Fire and smoke detectors typically operate by detecting:
 - (a) Heat fluctuations
 - (b) Changes in air pressure
 - (c) Presence of flames or smoke particles
 - (d) Electrical surges

Part B

(5 × 5 = 25)

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

11. (a) Describe the key elements of the fire triangle (tetrahedron, pentagon) and explain their interaction in fire development.

Or

- (b) Discuss different fire-fighting techniques and their suitability for various types of fires.
12. (a) Differentiate between active and passive fire protection systems and provide examples of each.

Or

- (b) Explain the key installation requirements for different types of fire extinguishers. Inspections in ensuring safety during blasting activities.
13. (a) Explain the working principle of a fire hydrant system and its role in firefighting.

Or

- (b) Differentiate between hose box, hose reel drum, and hose roll and their suitability for different situations.
14. (a) Describe the working principle of a CO₂ flooding system and its typical applications.

Or

- (b) Differentiate between CO₂ suppression and CO₂ flooding systems and their suitability for different fire scenarios.

15. (a) Describe the different types of fire and smoke detectors and their operating principles.

Or

- (b) Discuss the basic principles of electrical and electronic components used in fire alarm systems.

Part C

(5 × 8 = 40)

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

16. (a) Discuss the concept of fire load and its impact on fire intensity and spread.

Or

- (b) Discuss the National Building Code (NBC) classification of buildings based on occupancy and its role in fire safety design.

17. (a) Discuss the importance of fire drills and evacuation procedures in conjunction with fire protection systems for effective fire safety.

Or

- (b) Describe the working principle and limitations of fire balls as a fire suppression tool.

18. (a) Analyse a real-world case study where a hydrant or sprinkler system failure contributed to a fire incident and identify potential improvements.

Or

- (b) Discuss the role and requirements for a fire pump room in sprinkler systems.

19. (a) Describe the basic functions and equipment of a fire brigade and their role in firefighting operations.

Or

- (b) Discuss the emerging trends and technologies in fire suppression systems and their potential impact on firefighting strategies.
20. (a) Discuss the key considerations for installing fire alarm panels and manual call points (MCPs).

Or

- (b) Discuss the importance of proper detector placement and programming in a fire alarm system.
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C-7380

Sub. Code

90712

P.G. DIPLOMA EXAMINATION, NOVEMBER 2025

First Semester

Fire and Industrial Safety

INDUSTRIAL SAFETY MANAGEMENT

(2023 onwards)

Duration : 3 Hours

Maximum : 75 Marks

Part A

(10 × 1 = 10)

Answer **all** questions.

1. What is considered “unsafe work” in an industrial setting?
 - (a) Working overtime
 - (b) Working efficiently
 - (c) Working without following proper safety procedures
 - (d) Working with friendly colleagues

2. What is the primary function of a safety Management System (SMS)?
 - (a) To manage daily operations
 - (b) To conduct employee training
 - (c) To proactively identify and manage workplace hazards
 - (d) To track accident reports

3. Which type of PPE should be worn to protect the eyes from splashes of hazardous chemicals?
 - (a) Earmuffs
 - (b) Face shield
 - (c) Safety gloves
 - (d) Safety boots

4. When working with hazardous materials, which type of PPE might be necessary to protect the entire body from skin exposure?
 - (a) Safety glasses
 - (b) Coveralls
 - (c) Respirator
 - (d) Safety boots

5. What system establishes a formal process for authorizing work on electrical installations?
 - (a) Personal Protective Equipment (PPE) program
 - (b) Grounding and bonding program
 - (c) Permit to Work System
 - (d) Electrical safety training program

6. Which international standard provides recommendations for electrical safety?
 - (a) National Electrical Code (NEC)
 - (b) International Electrotechnical Commission (IEC) standards
 - (c) British Standards (BS)
 - (d) European Committee for Standardization (CEN) standards

7. What is the first level of control in the hierarchy of risk controls for chemical exposure?
 - (a) Administrative controls
 - (b) Personal protective equipment (PPE)
 - (c) Elimination (removing the hazard)
 - (d) Engineering controls

8. What is the primary function of a Safety Data Sheet (SDS)?
- (a) To advertise the benefits of the chemical
 - (b) To provide detailed instructions for using the chemical
 - (c) To communicate the hazards and safe handling procedures for a specific chemical
 - (d) To track the inventory of the chemical
9. Which organization develops and publishes voluntary safety standards in the United States?
- (a) ISO
 - (b) IEC
 - (c) American National Standards Institute (ANSI)
 - (d) Occupational Safety and Health Administration (OSHA)
10. Which organization played a key role in the development of the Globally Harmonized System (GHS) for hazard communication of chemicals?
- (a) World Health Organization (WHO) only
 - (b) International Labour Organization (ILO) only
 - (c) United Nations (UN)
 - (d) All of the above (WHO, ILO, and UN)

Part B

(5 × 5 = 25)

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

11. (a) Describe the essential elements of implementing a safety management system (SMS) in an industrial workplace.

Or

- (b) Differentiate between a hazard and a risk in industrial safety and explain their relationship.

12. (a) Explain how ear protection helps prevent hearing damage and discuss different types of ear protection available.

Or

- (b) Identify the main types of hand protection and explain how they protect against different hazards in industrial environments.

13. (a) Explain the concept of resistance and its role in electrical circuits using Ohms Law.

Or

- (b) Explain the concept of hazard analysis in electrical safety and how it helps identify and mitigate risks.

14. (a) Explain the three main types of chemicals and their associated hazards.

Or

- (b) Briefly explain the concept of toxicity and differentiate between acute and chronic toxicity.

15. (a) Describe the key provisions of the Environment Protection Act, 1986, and its significance in environmental safety.

Or

- (b) Explain the core principles of ISO 14000 and its role in promoting environmental management systems.

Part C

(5 × 8 = 40)

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

16. (a) Discuss the role of employee training and awareness in promoting a culture of safety in an industrial setting.

Or

- (b) Discuss the importance of developing and implementing standard operating procedures (SOPs) for various tasks in industrial settings.

17. (a) Describe the situations where respiratory protection is necessary and discuss different types of respirators available.

Or

- (b) Discuss the importance of maintaining and inspecting PPE regularly and the potential consequences of using damaged or worn-out equipment.

18. (a) Discuss the importance of the Lock Out Tag Out (LOTO) procedure and Permit to Work System in electrical safety.

Or

- (b) Describe the basic steps of Cardiopulmonary Resuscitation (CPR) and its significance in responding to electrical shock victims.

19. (a) Discuss the principles of Green Chemistry and how they can help reduce chemical hazards in the workplace.

Or

- (b) Analyse a real-world case study of a chemical accident and identify the key factors that contributed to the incident.
20. (a) Discuss the role of the American National Standards Institute (ANSI) in developing safety standards.

Or

- (b) Discuss the challenges and opportunities in harmonizing EHS regulations across different countries and regions.
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