C–8381	Sub. Code 90711

P.G. DIPLOMA EXAMINATION, APRIL 2026.

First Semester

Fire & Industrial Safety

FIRE SAFETY DESIGN, INSTALLATION & MAINTENANCE

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** questions.

1. What is the fourth component added to the Fire Triangle to form the Fire Tetrahedron?

   (a) Carbon (b) Chemical Reaction

   (c) Pressure (d) Smoke

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. Which of the following is considered a passive fire protection system?

(a) Fire Extinguisher

(b) Sprinkler System

(c) Fire Alarm

(d) Fire-rated Doors

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. The installation of a sprinkler system involves

(a) Positioning fire extinguishers strategically

(b) Placing fire hoses in designated cabinets

(c) Mounting sprinkler heads on the ceiling

(d) Installing smoke detectors

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. The installation of a clean agent suppression system involves

(a) Spraying water over the affected area

(b) Distributing foam to smother the fire

(c) Releasing a gaseous agent to suppress the fire

(d) Activating heat-resistant curtains

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. Maintenance and servicing of fire alarm systems are important to

(a) Ensure compliance with building codes and regulations

(b) Increase the likelihood of a fire

(c) Reduce the effectiveness of the system

(d) Avoid false alarms

Part B

$(5 \times 5 = 25)$

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

11. (a) Briefly explain the concept of flash point and its importance in fire prevention and safety.

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 concept and benefits of modular fire extinguishers and their suitability for specific situations.

13. (a) Explain the concept of clean agent suppression systems and their advantages over traditional water-based systems.

Or

(b) Differentiate between hose box, hose reel drum, and hose roll and their suitability for different situations.

14. (a) Explain the installation considerations for clean agent suppression systems, including room integrity and agent release requirements.

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) Explain the various communication techniques used in fire alarm systems.

Part C

(5 × 8 = 40)

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

16. (a) Identify potential ignition sources in different building types and suggest preventive measures.

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 operating methods of common fire extinguishers and emphasize the importance of proper training.

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 different types of foam used in fire suppression systems and their properties.

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) List any ten responsibilities of fire services department in India.

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C–8382	Sub. Code 90712

P.G. DIPLOMA EXAMINATION, APRIL 2026.

First Semester

Fire & Industrial Safety

INDUSTRIAL SAFETY MANAGEMENT

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** questions.

1. Which option represents the highest level of control in the hierarchy of controlling hazards?

   (a) Elimination

   (b) Substitution

   (c) Engineering Controls

   (d) Administrative Controls

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. A worker is handling sharp objects. What type of PPE should be worn to protect their hands from cuts and Punctures?

(a) Face shield

(b) Safety gloves (cut and puncture resistant)

(c) Safety hat

(d) Fall arrest harness

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. Which component stores electrical energy in an electrostatic field?

(a) Resistor (b) Conductor

(c) Capacitor (d) inductor

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. Which of the following is NOT a common route of entry for chemicals into the body?

(a) Inhalation (b) Ingestion

(c) Injection (d) Direct eye contact

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. What is the primary focus of the American National Standards Institute (ANSI)?

(a) Developing international environmental regulations

(b) Enforcing occupational health and safety standards

(c) Developing voluntary safety and performance standards for various industries

(d) Investigating workplace accidents and issuing fines

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

$(5 \times 5 = 25)$

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

11. (a) Briefly explain the key components of a comprehensive safety policy in an industrial setting.

Or

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

12. (a) Briefly explain the importance of wearing head protection in industrial settings and identify different types of head protection available.

Or

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

13. (a) Describe the three main types of electrical faults (overloads short circuits and ground faults) and their potential consequences.

Or

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

14. (a) Identify the four main routes of entry for chemicals into the human body and provide examples of each.

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 purpose and key regulations of the Hazardous Wastes (Management and Handling) Rules, 1989.

Part C

(5 × 8 = 40)

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

16. (a) Describe the purpose and key steps involved in conducting a thorough accident/incident investigation

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) Analyse a real-world case study, where improper use of PPE led to an accident or injury and identify the key lessons learned.

18. (a) Discuss The importance of international Standards like IEC 60038 for electrical safety and how they contribute to global harmonization.

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) Discuss the importance of proper labelling and understanding the Globally Harmonized System (GHS) pictograms for chemical safety.

20. (a) Compare and contrast the Health and Safety at Work Act (HASAWA) 1974 (UK) and OSHAS 18000 in their approach to workplace safety.

Or

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

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C–8383	Sub. Code 90721

P.G. DIPLOMA EXAMINATION, APRIL 2026.

Second Semester

Fire & Industrial Safety

CONSTRUCTION SAFETY

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** questions.

1. What PPE is used to protect hands from injury?

   (a) Boots (b) Vest

   (c) Gloves (d) Helmet

2. What footwear is necessary to protect feet on a construction site?

   (a) Linen (b) Boot

   (c) Sandal (d) Cover

3. What is a temporary structure used to support workers and materials during construction?

   (a) Demolition (b) Scaffold

   (c) Home (d) Cement

4. _____ is the leading cause of serious injury or death in the construction industry.

   (a) Rise (b) Crane

   (c) Fall (d) None of them

5. _____ should be provided to someone injured on a construction site.

(a) First Aid (b) Ignore

(c) Driving (d) Inspection

6. What machinery is commonly used for digging and excavation on construction sites?

(a) Lift (b) Crane

(c) Excavator (d) Truck

7. What process involves tearing down buildings or structures?

(a) Designing (b) Scaffolding

(c) Demolition (d) Basement

8. What environmental factors on construction sites can lead to hearing loss?

(a) Noise (b) Air

(c) Water (d) Vibration

9. What should be done to minimize dust and airborne particles during demolition?

(a) Water spray (b) Oil spilling

(c) Cleaning (d) Ignore

10. What is essential before starting any demolition work on a construction site?

(a) Site Inspection

(b) Risk assessment

(c) Check Weather

(d) All of the above

Part B (5 × 5 = 25)

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

11. (a) Name and explain the safety issues in the construction industry.

Or

(b) List the standard contractual clauses.

12. (a) What is basement and wide excavation?

Or

(b) Differentiate pre and post blast inspection.

13. (a) At what feet does OSHA require fall protection to be provided in construction and mention the free fall distance for OSHA.

Or

(b) State the uses of safety nets and name the standards for safety nets.

14. (a) Write short notes on mobile cranes.

Or

(b) Name the portable electrical tools and list their uses in construction.

15. (a) Shortly, discuss the risk involved in demolition work.

Or

(b) List the major 5 basic first aid and discuss them shortly.

Part C

(5 × 8 = 40)

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

16. (a) Explain the types of accidents related to construction activities.

Or

(b) Define quality assurance and state the role of QA in construction and briefly discuss with one example.

17. (a) How to inspect scaffolding? Briefly discuss the need and significance of the scaffold inspection checklist.

Or

(b) Describe the following:

(i) work over water and

(ii) tunnelling.

18. (a) Write about the need for and significance of gangways and ramps in construction.

Or

(b) Distinguish fall prevention and fall protection.

19. (a) Explore operation and inspection methods of tower cranes.

Or

(b) Explain the following:

(i) dumpers and

(ii) concrete pumps.

20. (a) State the need for and importance of pre-survey inspection.

Or

(b) Briefly discuss the fire hazards and prevention methods in construction.

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C–8384

Sub. Code
90722

P.G. DIPLOMA EXAMINATION, APRIL 2026.

Second Semester

Fire & Industrial safety

HIRA & SAFETY AUDIT

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** questions.

1. _____ activity involves management walking through the workplace to observe safety practices.

   (a) Safety tour (b) Assembly

   (c) Overview (d) Maintenance

2. _____ document provides a detailed account of safety-related findings and recommendations.

   (a) Tax document (b) Safety Report

   (c) Scrap filling (d) Tally sheet

3. _____ refers to the preliminary activities conducted before the primary audit process begins

   (a) Assessment (b) Formative

   (c) Organizing (d) Pre Audit

4. Which ISO standard focuses on the environmental management life cycle?

(a) 9001 (b) 14040

(c) 2000 (d) 2501 .

5. Which of the following techniques is primarily used to analyse the root causes of system failures in Industrial processes?

(a) HAZOP (b) GST

(c) FIR (d) PIB

6. What technique is used to analyze the root causes of system failures?

(a) FTA (b) CID

(c) BIS (d) ISI

7. _____ technique uses event trees to evaluate the consequences of initial events.

(a) FIA (b) Formative

(c) ETA (d) Control

8. _____ involves analyzing potential failure modes within a system to prioritize risks.

(a) GER (b) FMEA

(c) FTA (d) FIR

9. How frequently should safety inspections be conducted in high-risk environments?

(a) Bi-monthly (b) Half-yearly

(c) Ten years (d) Annually

10. What tool is commonly used to ensure all safety procedures are followed during an inspection?

(a) Checklist (b) Notepad

(c) Word (d) Format

Part B (5 × 5 = 25)

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

11. (a) What is horseplay? Discuss shortly about it.

Or

(b) Write short notes on risk ranking.

12. (a) Mention the steps involved in risk assessment.

Or

(b) Define Risk & explain the risk matrix shortly.

13. (a) Mention the types of inspection.

Or

(b) What is safety sampling? State the importance of it.

14. (a) What are all the methodologies involved in conducting a safety audit?

Or

(b) Narrate the need for and importance of onsite activities.

15. (a) List the safety management techniques and explore their significance of it.

Or

(b) Risk Priority Number — Describe shortly.

Part C (5 × 8 = 40)

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

16. (a) State the concept of AIARP and explore its application in risk assessment.

Or

(b) Briefly discuss about the unsafe act and unsafe condition.

17. (a) Elaborately discuss about the evaluation of hazard and Risk.

Or

(b) Explain quantitative Risk and qualitative risk assessment in detail.

18. (a) What is workplace inspection, and narrate the importance and purpose of it.

Or

(b) Describe in detail about duration of the inspection and safety culture.

19. (a) Classify types of safety audits and explain onsite activities in detail.

Or

(b) ISO 14040 (ECO LABELLING)-Discuss briefly.

20. (a) Explain the following: (i) FTA. (ii) ETA.

Or

(b) List the types of FMEA and elaborately discuss them.

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