

C-1385

Sub. Code

50111

DIPLOMA EXAMINATION, NOVEMBER 2023

First Semester

Fire and Industrial Safety Management

BASICS OF FIRE SAFETY

(2023 onwards)

Duration : 3 Hours

Maximum : 75 Marks

Part A

(10 × 1 = 10)

Answer **all** the questions.

1. What is the primary purpose of a smoke alarm in a residential setting?
 - (a) To indicate when dinner is ready
 - (b) To provide mood lighting
 - (c) To detect smoke and sound an alarm in the event of a fire
 - (d) To prevent insects from entering the house

2. What is the first step you should take if you discover a small fire and decide to use a fire extinguisher?
 - (a) Call the fire department
 - (b) Sound the fire alarm
 - (c) Pull the fire alarm
 - (d) Ensure a clear exit path and use the fire extinguisher

3. Which class of fire is associated with flammable metals such as magnesium or titanium?
- (a) Class A (b) Class B
(c) Class C (d) Class D
4. Safety goggles with shaded lenses are typically used for protection against what type of hazard?
- (a) Impact
(b) Dust
(c) Chemical splashes
(d) Sunlight
5. Which type of fire is typically controlled or extinguished by a fire sprinkler system?
- (a) Class A fire (b) Class B fire
(c) Class C fire (d) Class D fire
6. When handling sharp objects or materials, which type of gloves should be worn for hand protection?
- (a) Insulated gloves
(b) Cut-resistant gloves
(c) Welding gloves
(d) Disposable gloves

7. In a fire alarm system, what does the “alarm signal” typically trigger?
 - (a) Emergency lighting
 - (b) Water sprinklers
 - (c) Audible and visual alarms
 - (d) Elevator shutdown

8. Which of the following is a common method for protecting the skin from harmful UV (ultraviolet) rays?
 - (a) Applying moisturizer
 - (b) Staying indoors
 - (c) Wearing sunscreen or protective clothing
 - (d) Taking cold showers

9. Which type of respirator is typically used for protection against airborne particles, such as dust or pollen?
 - (a) Full-face respirator
 - (b) Supplied-air respirator (SAR)
 - (c) Dust mask (particulate respirator)
 - (d) Self-contained breathing apparatus (SCBA)

10. In the context of workplace safety, what is the primary hazard associated with confined spaces?
 - (a) Inadequate lighting
 - (b) Noise pollution
 - (c) The potential for toxic atmospheres, engulfment, or entrapment
 - (d) Slippery floors

Part B

(5 × 5 = 25)

Answer **all** the questions.

11. (a) Describe the different stages of fire development and the characteristics of each stage.

Or

- (b) What are some common ignition sources for fires in homes, businesses, and industries?

12. (a) Describe the different types of eye protection available, and the hazards that each type protects against.

Or

- (b) Describe how to properly fit and use head protection to ensure maximum effectiveness.

13. (a) Describe the best practices for using and caring for hand protection to ensure its effectiveness.

Or

- (b) Why is leg protection important in the workplace? What are some common leg hazards, and what types of leg protection are available?

14. (a) What are the different classes of fire alarm systems according to NFPA 72?

Or

- (b) What are the codes and standards that must be followed when installing a fire alarm system?

15. (a) Discuss the best practices for performing hot work in the vicinity of flammable and combustible liquids.

Or

- (b) How can you protect yourself from gases and vapours in the workplace? Explain.

Part C

(5 × 8 = 40)

Answer **all** the questions.

16. (a) Explain the mechanism of BLEVE (Boiling Liquid Expanding Vapor Explosion) and its potential hazards during fire fighting operations.

Or

- (b) What are the basic types of personal protective equipment (PPE), and how should they be selected for different work environments?

17. (a) Explain the types of fire extinguishers, such as water, CO₂, DCP, FOAM, and halogenated agents.

Or

- (b) Describe the types and construction of safety helmets, along with their care and maintenance.

18. (a) Describe the different components of a water-based sprinkler system, and explain how they work together to protect a building from fire.

Or

- (b) Discuss the importance of regular sprinkler system inspection and maintenance.

19. (a) Explain the functioning and applications of heat detectors, highlighting their role in detecting temperature changes and fire outbreaks in different environments.

Or

- (b) Identify the common causes of skin hazards in various occupational settings, emphasizing both physical hazards and exposure to harmful chemical substances.
20. (a) Discuss the necessary precautions for loading and unloading flammable and combustible liquids.

Or

- (b) Explain the various hazards related to oxygen deficiency and harmful contaminants such as smoke, fumes, spray, mists, gases, and vapors in industrial environments.
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C-1386

Sub. Code

50112

DIPLOMA EXAMINATION, NOVEMBER 2023

First Semester

Fire and Industrial Safety Management

CONSTRUCTION SAFETY

(2023 onwards)

Duration : 3 Hours

Maximum : 75 Marks

Part A

(10 × 1 = 10)

Answer **all** the questions.

1. In construction, what does the term “PPE” stand for?
 - (a) Professional Project Equipment
 - (b) Personal Protection Equipment
 - (c) Project Planning and Execution
 - (d) Per-construction Planning Evaluation

2. What is the term for a momentary lapse in attention that can lead to an accident?
 - (a) Concentration
 - (b) Fatigue
 - (c) Complacency
 - (d) Momentary distraction

3. In construction, what is the primary danger associated with confined spaces?
 - (a) Limited visibility
 - (b) Noise hazards
 - (c) The potential for toxic atmospheres, engulfment, or entrapment
 - (d) Excessive paperwork
4. What is the primary purpose of using guardrails on a construction site?
 - (a) To block access to the site
 - (b) To provide a place for workers to take breaks
 - (c) To prevent falls from elevated surfaces
 - (d) To increase noise levels
5. What is the minimum safe distance from an unprotected edge when working at heights without fall protection?
 - (a) 3 feet (0.9 meters)
 - (b) 6 feet (1.8 meters)
 - (c) 9 feet (2.7 meters)
 - (d) 12 feet (3.6 meters)
6. Which of the following is a primary component of personal fall protection equipment?
 - (a) Hard hat
 - (b) Steel-toed boots
 - (c) Safety glasses
 - (d) Harness and lanyard

7. Which construction machine is commonly used for lifting and moving heavy materials or equipment vertically?
- (a) Excavator (b) Grader
- (c) Forklift (d) Roller
8. Which machine is primarily used for compacting soil and creating a solid foundation for construction projects?
- (a) Roller (b) Paver
- (c) Bulldozer (d) Crane
9. What is the first step in ensuring safety during a demolition project?
- (a) Clearing the area of debris and materials
- (b) Conducting a thorough hazard assessment
- (c) Starting the demolition immediately
- (d) Notifying nearby residents
10. When demolishing structures near power lines, what safety measures should be taken?
- (a) Increase the distance between the equipment and power lines
- (b) Ignoring power lines as they are not a hazard
- (c) Use non-conductive equipment
- (d) Encourage workers to touch power lines to discharge static electricity

Part B

(5 × 5 = 25)

Answer **all** the questions.

11. (a) What are the primary causes of fatal accidents in the construction sector, and how can they be mitigated?

Or

- (b) Explain the role of construction regulations and contractual clauses in ensuring workplace safety and management.

12. (a) Evaluate the challenges of working in confined spaces during construction works.

Or

- (b) Examine the safety concerns related to working over water in construction site.

13. (a) What are the key provisions in OSHA 3146 for fall protection in construction, and how do they ensure workplace safety?

Or

- (b) What are the recommended safety practices for using scaffoldings, and how do they minimize construction hazards?

14. (a) How are hoisting cranes selected in construction considering load capacity and site conditions?

Or

- (b) Describe the functions of conveyors in construction and the necessary safety measures during their operation.

15. (a) What are the potential health hazards in demolition work as per Indian standards and how can workers be protected?

Or

- (b) What precautions ensure controlled execution when using explosives in demolition?

Part C

(5 × 8 = 40)

Answer **all** the questions.

16. (a) Assess the effectiveness of education and training programs in promoting a culture of safety in the construction industry and their impact on reducing workplace accidents.

Or

- (b) Discuss the various types of construction accidents and their preventive measures in different construction activities.

17. (a) Discuss the risks associated with blasting, emphasizing the importance of pre-blast and post-blast inspections for ensuring construction site safety.

Or

- (b) Discuss the specific safety challenges involved in power plant constructions.

18. (a) How do case studies of past accidents inform the enhancement of fall protection measures in the construction industry?

Or

- (b) Describe the safety protocols and equipment are necessary for working on fragile surfaces in construction.

19. (a) Provide an overview of the operational guidelines for heavy equipment like dumpers motor graders and concrete pumps.

Or

- (b) Explain the safety precautions for using welding machines and portable electrical tools.

20. (a) Discuss the significance of pre-survey inspections for identifying hazards in demolition work.

Or

- (b) Explain the key measures for ensuring the safe use of mechanical equipment in demolition.
