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Safety Skill Development Foundation

MICRO-CREDENTIALS

Basics of Safety Requirements in Working at Height

NSQF Level 2

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Acknowledgments

This Participant Handbook of the [Basics of Safety Requirements in Working at Height; SSD/M0110],developed by the Safety Skill Development Foundation (SSDF), provides essential information for current and prospective job holders. It reflects our collective commitment to fostering a culture of safety and equipping individuals in this role with the necessary skills to navigate and mitigate risks effectively. The content is compiled with valuable insights from Subject Matter Experts (SMEs) and industry professionals, ensuring its relevance and alignment with industry standards.

We extend our special thanks to CORE-EHS Solutions Pvt Ltd for their unwavering support & expertise in developing the course materials, which has significantly enhanced the quality and safety practices of this handbook.

We are grateful for the support of trainers, assessors, and industry experts who have enriched the content, ensuring it addresses the real-world needs of learners and fosters a culture of safety, health, and environmental consciousness.

We also acknowledge the support of all stakeholders, including government bodies, sector skill councils, and construction professionals, for their encouragement and commitment to advancing occupational safety and sustainable practices in the construction sector.

As the handbook is designed to support skill-based training, benefiting the participants, trainers, and evaluators. SSDF remains committed to uphold high-quality standards for QP/NOS-based training programs and welcomes suggestions from all stakeholders for future improvements.

Preface

Working at height is one of the most hazardous activities in various industries, yet it is also an essential part of many tasks, from construction and maintenance to telecommunications and energy sectors. The risks associated with working at height are significant, with the potential for serious injury or fatality if safety measures are not strictly adhered to. As such, understanding and implementing safety protocols is not just a regulatory requirement but a moral imperative to protect workers and ensure the safe execution of tasks.

This manual, *Basics of Safety Requirements in Working at Height*, has been created as a comprehensive resource to guide professionals, employers, and workers in identifying and mitigating risks associated with working at elevated positions. It serves as an essential tool for anyone involved in activities were working at height is required, from technicians and safety officers to managers and field workers.

The primary objective of this manual is to provide practical, actionable guidelines for maintaining safety when working at height. It covers a wide range of critical safety topics, including fall protection, scaffolding, ladder safety, proper use of personal protective equipment (PPE), risk assessment, and emergency preparedness. The content is designed to address the practical aspects of working at height, ensuring that readers can apply these principles effectively in their daily operations.

Additionally, this handbook includes insights into industry best practices, regulatory standards (such as OSHA, EN 365, and others), and recent advancements in fall protection technology. Emphasis is placed on creating a safety culture where everyone involved—whether in construction, maintenance, or any industry requiring elevated work—plays a role in ensuring a secure working environment.

At the heart of this manual is the goal of reducing the number of accidents and fatalities resulting from falls. This is achieved through a combination of proper training, the correct use of equipment, and the continuous assessment of risks associated with the work environment. By following the safety practices outlined in this guide, industries can create safer workplaces, improve compliance with safety regulations, and protect their most asset—human life.

Whether you are a seasoned professional or just beginning in a field that involves working at height, this manual will equip you with the knowledge and tools to minimize risks, promote safety, and take the necessary precautions to prevent accidents.

Thank you for your commitment to safety. We hope this handbook serves as a valuable resource in your journey to creating safer working environments for all.

Together, let’s prioritize safety at height and build a culture of protection and care.

Welcome to the future of safety management.

Thank you.

J. K. Anand

Founder & Director

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Introduction

Working at height is an essential but high-risk activity across a wide range of industries, including construction, maintenance, energy, telecommunications, and manufacturing. Falls from height remain one of the leading causes of occupational injuries and fatalities. As such, preventing falls and managing associated risks must be a top priority for every organization and individual involved in elevated work.

This handbook is designed to provide clear, practical, and actionable safety guidance for professionals working at height. It covers foundational principles such as risk identification, equipment selection, fall protection systems, and regulatory compliance, as well as detailed safety procedures and rescue protocols. By equipping professionals with essential knowledge and best practices, this handbook aims to enhance workplace safety, reduce accidents, and ensure compliance with relevant occupational health and safety standards.

Purpose of the Handbook

The purpose of this handbook is to serve as a comprehensive guide for preventing falls and ensuring safety while working at height. It provides detailed information on the risks associated with elevated work, the necessary personal protective equipment (PPE), fall protection systems, and procedures to follow to ensure worker safety.

This resource aims to:

Educate workers on fall hazards and how to mitigate them.

Ensure the correct selection and use of fall prevention equipment.

Promote safe practices through step-by-step procedures and regulatory guidance.

Support organizations in complying with occupational health and safety laws and standards.

Foster a culture of safety and personal responsibility in height-related tasks.

Scope and Content

This handbook is divided into two main modules:

1: Fall Prevention and Equipment Selection

Defining Risks and Challenges involved in working at height, including environmental conditions, equipment failures, and human errors.

Identifying Safety Measures and Precautions such as planning, supervision, and proper equipment usage.

Enumerating PPE and Fall Protection Systems, including body harnesses, lifelines, lanyards, and anchorage systems.

Judging the Stability of Elevated Platforms like scaffolding, mobile work platforms, and ladders.

Understanding Provisions as per Regulations, including OSHA, IS 3521, EN 361, and other applicable standards.

Recognizing Incompatible Health Conditions that may affect a worker's ability to safely work at height.

Medical Screening Procedures to ensure physical and psychological fitness for height-related work.

2: Fall Safety Procedures and Measures

Precautions on Ascending/Descending to reduce slips, trips, and falls during movement.

Measures to Protect Persons Below using toe boards, netting, and restricted zones.

Ground-Level Safety Measures, such as equipment placement and securing tools to prevent falling objects.

Identifying Causes and Negligence in accidents to promote accountability and continuous improvement.

Reporting Hazards effectively to ensure timely correction and reduce risk exposure.

Rescue Measures in case of a fall, including self-rescue, assisted rescue, and emergency response planning.

Avoiding Work Under Unsafe Conditions, including poor weather, structural instability, and insufficient lighting.

Learning Objectives

Upon completing this handbook, learners will be able to:

- Recognize the risks and challenges associated with working at height.
- Understand and implement appropriate fall prevention measures.
- Select, inspect, and use PPE and fall protection systems correctly.
- Assess the stability of work platforms before use.
- Follow regulatory requirements and company policies related to height work.
- Identify health conditions that are incompatible with working at height.
- Understand the importance of pre-employment and periodic medical screening.
- Apply safe procedures when ascending or descending elevated areas.
- Implement safety measures to protect workers below.
- Report hazards and unsafe conditions effectively.
- Execute rescue operations in the event of a fall.
- Develop the judgment to refuse unsafe work and escalate concerns.

Alignment with Industry Norms and Innovation

This handbook aligns with both Indian and international safety standards, incorporating modern innovations in fall protection and safety management. It is based on:

Indian Standards (IS) such as IS 3521 (Fall Arrest Systems), IS 3696 (Scaffolds), and IS 13367 (Ladders).

International Standards like OSHA (29 CFR 1926.501), ISO 45001 (Occupational Health & Safety Management), and EN 363 (Fall Protection Systems).

Innovative Practices, including:

Use of smart PPE with built-in sensors.

Integration of IoT-based monitoring for workers at height.

Advanced fall arrest and self-retracting systems.

Augmented reality (AR) safety training simulations.

Real-time hazard reporting via mobile applications.

Who Should Use This Handbook

This handbook is intended for:

Workers performing tasks at height.

Supervisors and Safety Officers responsible for managing work-at-height operations.

Facility Managers and **Project Engineers** overseeing high-risk work environments.

Training Institutions offering safety certifications and courses.

Students and Apprentices preparing for roles in construction, electrical maintenance, industrial services, and other related fields.

Whether you're a beginner or an experienced professional, this handbook provides practical, field-relevant guidance tailored to your role and responsibilities.

How to Use This Handbook

Start with Module 1 to understand the risks and prepare adequately with proper equipment and planning.

Progress to Module 2 for procedural safety, including on-site conduct and emergency management.

Use checklists, diagrams, and examples provided in the handbook to reinforce learning.

Conduct toolbox talks and group discussions based on handbook content to enhance team safety awareness.

Keep this handbook accessible on-site for quick reference during inspections or incident responses.

Use it as a **training manual** for onboarding new workers or refreshing the knowledge of experienced personnel.

Refer to **regulatory sections** to ensure compliance with government and industry safety standards.

The Path Forward

Preventing falls is not a one-time effort but an ongoing commitment to safety. Moving forward:

Identify potential hazards proactively and ensure pre-job risk assessments are standard practice.

Train all employees regularly on PPE usage, emergency procedures, and equipment inspections.

Invest in quality equipment and regularly inspect and maintain all safety gear and elevated platforms.

Encourage a speak-up culture, where workers can report unsafe conditions without fear of reprisal.

Embrace technology—use sensors, smart PPE, and safety apps to enhance oversight and rapid response.

Evaluate safety performance and incidents to identify areas for improvement.

Stay compliant and current with changes in legal regulations and industry best practices.

Overview of this Program

Basics of Safety Requirements in Working at Height

Working at height is one of the most hazardous tasks in many industries, including construction, maintenance, energy, telecom, and manufacturing. Falls from heights are a leading cause of serious injuries and fatalities at the workplace. This program is designed to build strong foundational knowledge and skills for preventing fall-related incidents through proper planning, equipment uses, and compliance with safety regulations.

The Basics of Safety Requirements in Working at Height program equips participants with the essential understanding of fall hazards, personal protective equipment (PPE), legal requirements, and safe work practices. The program combines theoretical knowledge with practical safety procedures to ensure that workers, supervisors, and safety professionals can effectively manage risks and respond to emergencies while performing tasks at height.

Key Focus Areas:

- Understanding the **risks and challenges** involved in height work
- Correct **selection and use of PPE and fall protection systems**
- **Assessing stability** of ladders, scaffolds, and elevated platforms
- Compliance with **regulations and industry safety standards**
- Conducting **medical fitness screenings** for height work
- Ensuring **safe ascending/descending procedures**

- Implementing **fall rescue plans and emergency measures**
- Promoting a **safety culture** through hazard reporting and accountability

Target Audience:

- Workers involved in height-based tasks
- Safety officers and supervisors
- Site engineers and foremen
- Facility managers
- Trainees and vocational students in industrial fields

Program Goals:

- **Reduce fall-related incidents** by educating personnel on best practices
- Ensure **legal and regulatory compliance** (OSHA, IS standards, etc.)
- Foster a culture of **safety awareness, responsibility, and prevention**
- Equip participants with the skills to **identify, control, and eliminate hazards**

Qualification Parameters

Developed by	:	Safety Skill Development Foundation
MC Code	:	SSD/M0110
MC name	:	Basics of Safety Requirements in Working at Height
NSQF Level	:	2
Used by Sectors	:	Construction, Infrastructure, Real estate, Iron & Steel, Mining, Logistics, Hydrocarbon and others
Occupation	:	Construction Engineering & Management
Country	:	India
Minimum Educational Qualification & Experience	:	8th grade pass

Assessment Guidelines

The assessment criteria given is for Micro credential “Basics of Safety Requirements in Working at Height”

Assessments can be carried out offline as well as online and shall be carried out by SSDF only.

Questions will be formed in such a way as to provide an outcome on maximum Performance Criteria.

The assessment will be of half an hour duration and will be based on multiple choice questions created / Approved by the SSDF.

The certificate on MC will be issued to successful candidates who score 50% or more than 50%.

Glossary of Terms

1. **Height Work** – Any task performed at a level where a fall could cause injury.
2. **Fall** – A drop from a higher to a lower level, often sudden and uncontrolled.

3. **Fall Protection** – Equipment or methods used to prevent or minimize injury from falls.
4. **Harness** – A safety device worn by workers to secure them to a support system.
5. **Lanyard** – A rope or strap connecting a harness to an anchor point.
6. **Anchor Point** – A secure point used to attach fall protection equipment.
7. **Scaffold** – A temporary structure used to support workers and materials.
8. **Ladder** – A portable or fixed climbing device used to access heights.
9. **Toe Board** – A low barrier on platform edges to prevent objects from falling.
10. **Guardrail** – A protective barrier at edges of platforms or walkways.
11. **Rescue Plan** – A predefined method to safely retrieve a fallen worker.
12. **Self-Retracting Lifeline (SRL)** – A device that automatically locks during a fall.
13. **Fall Arrest System** – Stops a worker's fall and limits the impact force.
14. **Fall Restraint System** – Prevents a worker from reaching a fall hazard.
15. **Work Positioning System** – Keeps a worker in place, allowing hands-free work.
16. **Free Fall Distance** – Distance a person falls before the fall arrest activates.
17. **Deceleration Device** – Slows down a fall to reduce impact.
18. **Access Equipment** – Tools like ladders, lifts, and platforms for reaching height.
19. **Elevated Work Platform (EWP)** – Machinery like cherry pickers or scissor lifts.
20. **Inspection** – Routine check of equipment or site for safety compliance.
21. **Permit to Work** – Official authorization to perform risky tasks like height work.
22. **Safety Line** – A rope or cable that connects a harness to an anchor.
23. **Load Rating** – Maximum safe weight a structure or device can hold.
24. **Edge Protection** – Measures like rails or netting to prevent falls from edges.
25. **Hazard Assessment** – Identifying risks before starting height-related tasks.

Roles and Importance of Training in Working at Height Safety

Effective fall prevention and safety while working at height depend on the clear understanding and execution of defined roles. Each participant in a work-at-height scenario has specific responsibilities, and their collective efforts ensure a safer environment.

Key Roles and Their Responsibilities:

1. **Workers at Height:**
    - **Follow safety procedures, use PPE correctly, and adhere to supervisor instructions.**
    - **Report hazards or unsafe conditions immediately.**
    - **Participate in medical screenings and training programs.**
2. **Site Supervisors/Foremen:**
    - **Conduct site-specific risk assessments.**
    - **Ensure all workers are trained, medically fit, and equipped with proper fall protection systems.**
    - **Monitor ongoing compliance with safety protocols.**
3. **Safety Officers:**
    - **Develop and enforce fall protection plans and site safety policies.**

- **Perform equipment inspections and safety audits.**
- **Lead emergency response and rescue training.**

4. **Engineers/Designers:**
    - **Design stable and secure elevated platforms and access systems.**
    - **Ensure compatibility of structure and safety systems with relevant standards.**
5. **Medical Professionals:**
    - **Conduct pre-placement and periodic medical evaluations.**
    - **Identify health conditions incompatible with working at height.**
6. **Management and Employers:**
    - **Provide safety training, appropriate PPE, and necessary infrastructure.**
    - **Create a safety-first culture and support reporting of hazards without fear.**

Importance of Training

Training is critical in preparing workers to recognize and respond to fall-related risks, use protective equipment correctly, and take proactive measures to avoid incidents. Proper training reduces the likelihood of accidents, enhances decision-making in emergencies, and ensures regulatory compliance.

Training Outcomes Linked to Modules:

1: Fall Prevention and Equipment Selection

1. **Define Risks and Challenges while Working at Height**
    - Training ensures workers understand gravity-related hazards, surface instability, environmental challenges (e.g., wind, rain), and human factors (e.g., fatigue, distraction).
2. **Identify Safety Measures and Precautions**
    - Enables individuals to implement guardrails, toe boards, restraint systems, and safe work procedures.
3. **Enumerate PPEs and Fall Protection Systems**
    - Teaches the selection, inspection, usage, and limitations of harnesses, lanyards, lifelines, and anchors.
4. **Judging Stability of Elevated Platforms**
    - Trains workers and supervisors to assess scaffolding, ladders, aerial work platforms, and makeshift structures for load capacity and integrity.
5. **Provisions as per Regulations**
    - Ensures knowledge of national and international codes (e.g., IS 3521, OSHA, ISO 45001) to maintain legal and safe operations.
6. **Recognize Incompatible Health Conditions**
    - Educates supervisors and workers to identify conditions like vertigo, hypertension, and poor vision that pose increased risk.
7. **Medical Screening Procedures**
    - Training outlines the protocols for fitness assessments, documentation, and return-to-work evaluation.

2: Fall Safety Procedures and Measures

1. **Precautions on Ascending/Descending**
    - Instruction on the safe use of ladders and climbing systems, three-point contact method, and maintaining tool control during transitions.

2. **Measures to Protect Persons Below**
    - Encourages use of falling object protection (e.g., netting, barricades), and restricted access zones.
3. **Ground-Level Safety Measures**
    - Includes hazard awareness for personnel supporting height work, positioning of tools, and managing electrical/chemical risks on the ground.
4. **Identify Causes and Negligence**
    - Helps workers recognize unsafe acts and conditions such as bypassed equipment checks or lack of supervision.
5. **Reporting Hazards**
    - Training encourages a culture of immediate and clear communication about potential dangers.
6. **Rescue Measures**
    - Prepares teams for post-fall rescue operations, including use of rescue kits, aerial platforms, and victim handling protocols.
7. **Avoid Work Under Unsafe Conditions**
    - Empowers workers to pause or refuse work under conditions like high winds, poor visibility, or incomplete safety setups.

Why Continuous Training is Essential

- Technology Evolves: Newer fall protection systems and PPE require updated training.
- Regulations Change: Workers must be informed of changes in legal safety requirements.
- Skill Retention: Regular training refreshes knowledge and reinforces safe habits.
- Incident Learning: Training post-incident helps apply lessons learned and prevent recurrence.

Acronyms

1. **PPE** – Personal Protective Equipment
2. **SRL** – Self-Retracting Lifeline
3. **LOTO** – Lockout/Tagout
4. **EWP** – Elevated Work Platform
5. **FAS** – Fall Arrest System
6. **FRD** – Free Fall Distance
7. **WAH** – Work at Height
8. **SWL** – Safe Working Load
9. **OSHA** – Occupational Safety and Health Administration (U.S.)
10. **IS** – Indian Standards
11. **HIRA** – Hazard Identification and Risk Assessment
12. **MSP** – Medical Screening Procedure
13. **PTW** – Permit to Work
14. **RA** – Risk Assessment
15. **OHS** – Occupational Health and Safety

Module 1: Fall Prevention and Equipment Selection

Introduction

Working at height remains one of the leading causes of workplace injuries and fatalities across multiple industries. Tasks performed above ground level—whether on ladders, scaffolds, rooftops, or elevated platforms—pose significant risks if safety measures are not correctly implemented. Falls can occur due to equipment failure, human error, unstable surfaces, poor weather conditions, or lack of proper training.

This module is designed to build awareness and technical competence regarding fall risks and to guide the proper selection and use of fall prevention systems and protective equipment. It emphasizes a proactive safety approach, aligning with national and international safety standards.

Scope

This module covers the fundamental principles, equipment, and procedures needed to prevent falls when working at height. It includes hazard identification, control measures, selection of fall protection systems, and the importance of medical fitness. It also introduces relevant regulations and compliance requirements that must be met before undertaking height-related tasks.

Topics covered:

- Fall hazards and risk factors in elevated work environments
- Types and usage of fall protection equipment (PPE, arrest systems, etc.)
- Methods to assess and ensure the stability of platforms and structures
- Medical considerations and screening procedures for workers
- Overview of Indian and international regulatory frameworks

Learning Outcomes

By the end of this module, participants will be able to:

1. **Define Risks and Challenges while Working at Height**
    - Identify common causes of falls (e.g., unprotected edges, unstable structures, slippery surfaces).
    - Recognize environmental and human factors contributing to fall hazards.
    - Understand the types of injuries and consequences associated with falls.
2. **Identify Safety Measures and Precautions**
    - Implement pre-task safety planning, including risk assessments and checklists.
    - Understand the importance of housekeeping, proper lighting, and secure access points.
    - Apply safety controls such as guardrails, warning signs, and designated access zones.
3. **Enumerate PPEs and Fall Protection Systems**
    - Identify essential PPE for working at height: full-body harnesses, helmets, shock-absorbing lanyards, anchor systems.
    - Differentiate between fall arrest, fall restraint, and work positioning systems.
    - Perform visual inspections and basic maintenance of PPE.
4. **Judge the Stability of Elevated Platforms**
    - Assess load-bearing capacity, levelling, and structural integrity of scaffolds, ladders, and platforms.

- Ensure compliance with design specifications and operational safety standards.
- Use stability tools like base plates, outriggers, and platform ties.

5. **Understand Provisions as per Regulations**
    - Familiarize with Indian regulations: OSH Code-2020, IS 3521, CEA safety guidelines.
    - Align with international standards like ISO 45001, OSHA 1926, and EN 363.
    - Understand legal obligations of employers and rights of workers.
6. **Recognize Incompatible Health Conditions**
    - Identify health issues that disqualify or endanger workers at height (e.g., vertigo, epilepsy, heart problems).
    - Emphasize the importance of honesty in health declarations.
    - Encourage supervisors to monitor signs of fatigue or discomfort.
7. **Understand Medical Screening Procedures**
    - Explain the need for pre-placement and periodic medical evaluations.
    - List parameters typically screened: vision, blood pressure, balance, strength, and stress levels.
    - Encourage documentation and follow-up for at-risk individuals.

PC-1: Define Risks and Challenges while Working at Height

Objective

To identify and understand the various **risks, hazards, and challenges** associated with working at height, and to build awareness for planning safe work operations above ground level.

Definition of "Working at Height"

"Any work conducted at a level where a person could fall and cause personal injury, whether it is above or below ground level."

Examples of Working at Height:

- Climbing ladders or scaffolds
- Working on rooftops, towers, or platforms
- Using Mobile Elevated Work Platforms (MEWPs)
- Maintenance on building exteriors or overhead structures

Types of Risks while Working at Height

Risk Type	Explanation
Falls from height	Most significant risk; leads to serious injury or death.
Falling tools/materials	Can injure workers below or damage property.
Structural failure	Collapse of ladders, scaffolds, platforms due to overloading or poor design.
Unstable footing	Slippery, sloped, or weak surfaces lead to imbalance.
Weather hazards	Wind, rain, or snow makes surfaces slick and dangerous.
Inadequate access/egress	Difficult rescue or escape in emergencies.

Risk Type	Explanation
Electrical hazards	Contact with live wires or overhead power lines.
Inadequate training	Untrained workers may misuse equipment or take unsafe actions.

Common Causes of Falls

- Lack of edge protection (guardrails or toe boards)
- Improper ladder placement or usage
- Defective scaffolding or access equipment
- Absence of fall arrest or restraint systems
- Lack of PPE or improper use of PPE
- Inadequate supervision or risk assessment
- Overloading structures with materials or tools

Challenges Faced in Controlling Height Work Hazards

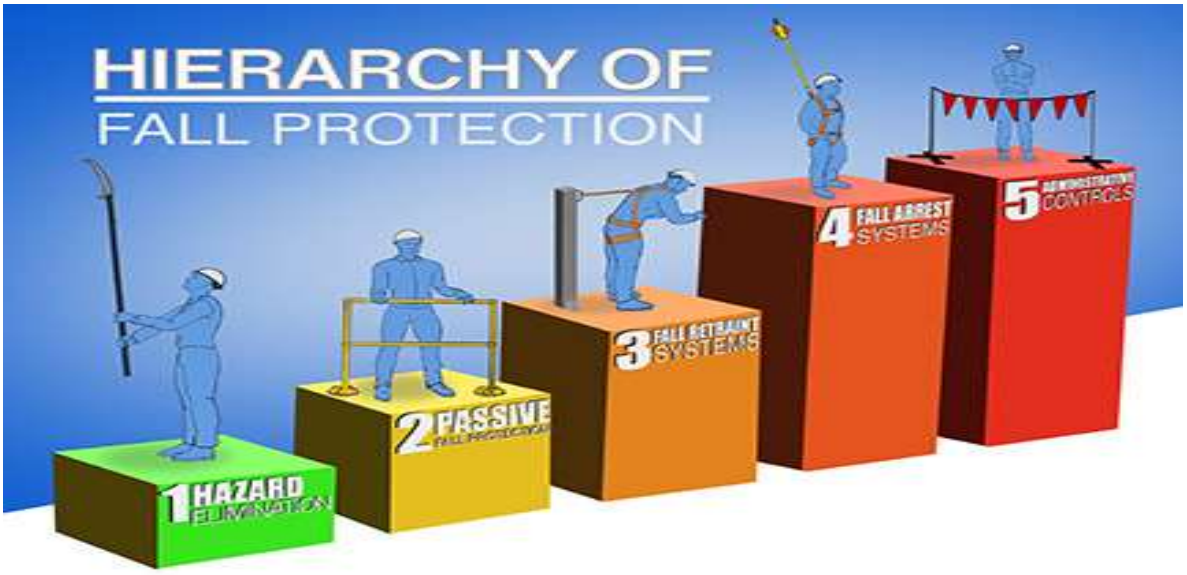
Challenge	Impact
Changing work environments	Weather and site conditions can shift rapidly
Human error	Overconfidence or distraction can lead to slips or falls
Access difficulties	Difficult to secure safe access to certain heights
Resource constraints	Insufficient safety gear or improper budget for safety systems
Time pressure	Rushing can lead to skipping safety steps
Communication issues	Misunderstanding between ground and elevated workers

Real-Life Case Study Example

Incident: Rooftop maintenance worker fell from 10 meters
Cause: No harness, slippery metal sheet, and no guardrails
Result: Fatal head injury
Lesson: Never work at height without proper PPE and edge protection. Always secure working surfaces.

Risk Control Hierarchy for Work at Height

1. **Avoid** working at height if possible
2. **Prevent** falls using guardrails, platforms
3. **Minimize** injury with fall arrest systems (harness, lanyard, safety nets)



Summary Table – Risks and Challenges at Height

Category	Details
Physical Risk	Fall from height, falling objects, structural collapse
Environmental Risk	Weather effects like wind, rain, heat
Operational Risk	Equipment failure, poor maintenance, unstable surfaces
Human Factor	Lack of training, fatigue, error
Emergency Risk	Difficult rescue operations, unplanned evacuation

Key Takeaways

- Always identify and assess risks before beginning any task at height.
- Eliminate the need to work at height wherever possible.
- Use safe equipment and train all personnel.
- Monitor environmental conditions and update safety protocols accordingly.
- Prioritize prevention over protection — stop the fall from happening.

PC-2: Identify Safety Measures and Precautions While Working at Height

Objective

To outline and implement effective **safety measures and precautions** that protect workers from height-related hazards and ensure compliance with safety regulations.

Why Safety Measures Are Crucial

Falls from height are a leading cause of serious injury and death in construction, maintenance, and industrial jobs. Implementing proper safety measures is vital to prevent:

- Fatal falls
- Falling objects injuring people below
- Equipment damage
- Legal liabilities and downtime

General Safety Measures for Working at Height

Measure	Explanation
Risk Assessment	Conduct site-specific hazard identification and assessment before work starts.
Permit to Work System	Use written authorizations for any task involving height work.
Work Planning & Method Statement	Plan sequence of tasks, access routes, emergency response, etc.
Use of Trained Personnel	Only competent, trained workers should perform height tasks.
Edge Protection	Install guardrails, toe boards, or barriers around open edges.
Fall Protection Systems	Use full-body harnesses, fall arrest, or restraint systems.
Proper Access Equipment	Use ladders, scaffolds, MEWPs that are certified and well-maintained.
Weather Monitoring	Avoid height work during wind, rain, lightning, or extreme heat.
Tool Lanyards	Use tool tethering systems to prevent objects from falling.
Warning Signs and Barricades	Mark danger zones clearly and restrict unauthorized access.
Inspection & Maintenance	Daily checks of platforms, PPE, anchor points, and ladders.

Precautions to Be Followed Before, During, and After Work

❖ Before Work:

- Inspect all PPE and tools
- Review Job Safety Analysis (JSA)
- Ensure all workers are trained

- Secure work permits
- Confirm weather conditions

❖ During Work:
- Maintain 3-point contact on ladders
- Use lifelines and shock absorbers
- Keep area below work zone clear
- Stay alert and maintain communication
- Don't overload platforms or baskets

❖ After Work:
- Dismantle access systems carefully
- Report and record any incidents
- Store PPE and tools properly
- Conduct debriefs and hazard review

Administrative Controls

Control	Description
Training & Certification	Mandatory for all height workers and supervisors.
Checklists	Use pre-use inspection checklists for scaffolds, ladders, harnesses.
Emergency Planning	Create site-specific rescue plans and drill teams on retrieval techniques.
Monitoring & Supervision	Regular supervision to ensure compliance.

Common Mistakes to Avoid

- Skipping risk assessment
- Using ladders on uneven ground
- Working near uninsulated power lines
- Ignoring weather warnings
- Not wearing or anchoring fall arrest systems properly
- Improper scaffold assembly

Summary Table – Safety Measures & Precautions

Category	**Examples**
Planning & Admin	Risk assessment, permit to work, training, rescue plans
Engineering Controls	Guardrails, anchor points, fixed ladders, safe platforms
PPE & Tools	Harness, lanyards, helmets, tool tethers
Environmental Measures	Wind shields, lightning arresters, temperature breaks
Operational Controls	3-point ladder contact, zone demarcation, fall zone clearance

Key Takeaways

- Never begin height work without proper planning, training, and equipment checks.
- Use a combination of **preventive** and **protective** controls.
- Regular supervision and maintenance of all equipment is essential.
- Safety culture starts with awareness and ends with accountability.

Daily Inspection Checklist – Working at Heights Equipment

Equipment	Inspection Item	Pass (✓/✗)	Remarks
Harness	Check webbing for cuts, fraying, burns, or wear		
	Inspect stitching for integrity (no loose threads)		
	Ensure buckles are undamaged and function properly		
	Verify D-rings are secure, not cracked or corroded		
	Labels are legible and meet safety standards		
Lanyard	Check lanyard for frays, burns, or other damage		
	Ensure shock absorber is intact (not deployed)		
	Verify hooks/carabiners lock securely and are rust-free		
	Confirm correct length and type for task		
Platform	Guardrails and toe boards are installed and secure		
	Surface is clean, slip-resistant, and free of debris		
	Structural integrity – no rust, cracks, or loose parts		
	Platform is level and stable on firm ground		

PC-4: Enumerate PPEs and Fall Protection Systems

Working at heights presents serious safety risks, making the use of Personal Protective Equipment (PPE) and Fall Protection Systems essential to prevent accidents, injuries, or fatalities. This section provides a comprehensive overview of the types of PPE and fall protection systems used in elevated work environments, their correct usage, and maintenance.

Personal Protective Equipment (PPE)

PPE refers to specialized clothing or equipment worn by workers to protect against health and safety hazards.

Full Body Harness

Safety Belt with Single Lanyard

Fall Arrestor

Rescue Tripot

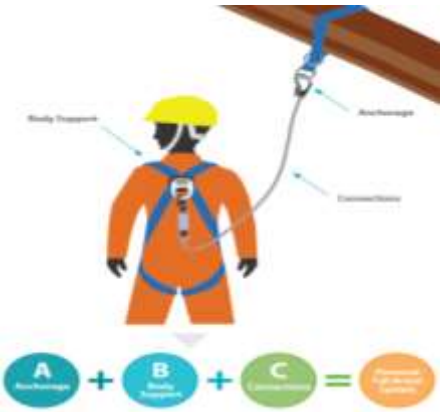
Common PPEs for Working at Heights

PPE	Function
Full-Body Harness	Distributes fall force across thighs, pelvis, chest, and shoulders
Hard Hat with Chin Strap	Protects the head from falling objects and head trauma in the event of a fall
Safety Footwear	Slip-resistant sole provides grip; protects feet from impact and puncture
High-Visibility Clothing	Enhances worker visibility to coworkers and machinery operators
Gloves	Protects hands from abrasions and improves grip
Eye Protection	Shields against dust, debris, wind, and chemical splashes
Hearing Protection	Guards against long-term hearing loss in noisy environments
Respirators/Dust Masks	Used when working in dusty or polluted environments at height

Fall Protection Systems

Fall protection systems are engineering, and personal controls designed to prevent or arrest a fall from height.

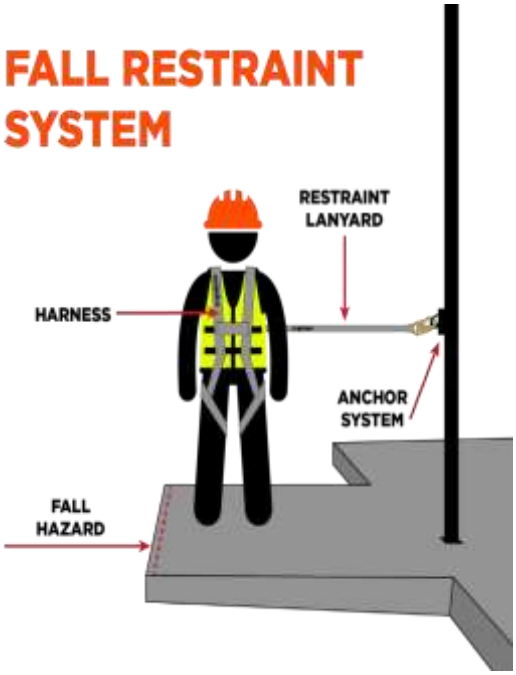
Types of Fall Protection Systems



Fall Arrest System

- **Purpose:** Stops a worker in free fall.
- **Components:**
  - Full-body harness
  - Energy-absorbing lanyard or self-retracting lifeline (SRL)
  - Certified anchor point
- **Use Case:** When there is no feasible way to prevent the fall, this system minimizes injury from the fall.

Fall Restraint System



- **Purpose:** Prevents the worker from reaching a fall hazard.
- **Components:**
  - Harness with a fixed-length lanyard
  - Anchored at a distance from the fall edge
- **Use Case:** Rooftop maintenance or elevated flat platforms.

Work Positioning System

- **Purpose:** Supports the worker in a partially suspended position to allow hands-free work.
- **Components:**
  - Body belt or full-body harness
  - Positioning lanyards
- **Use Case:** Tower, pole, or utility work.

Guardrails and Toe Boards

- **Purpose:** Passive fall protection.
- **Use Case:** Scaffold edges, open platforms, or roof perimeters.

Safety Nets

- **Purpose:** Catches workers or falling materials.
- **Use Case:** Construction or bridge work where other systems are not feasible.

Lifeline Systems

- **Horizontal Lifeline:** Used where lateral movement is needed.
  - **Vertical Lifeline:** Used for up-and-down movement such as ladder climbing.
  - **Fall Arrestor:** Attached to the line and harness, automatically locks in the event of a fall.

Anchor Points

- **Purpose:** Secure point of attachment for lifelines, lanyards, or deceleration devices.

- **Requirement:** Must be rated (usually 5000 lbs minimum per OSHA/IS standards).

Safety Tips for Use

- Always **inspect PPE and fall protection systems before use**.
- Do **not reuse** equipment involved in a fall without inspection and certification.
- Ensure **anchor points are tested and certified**.
- Follow **training and manufacturer's instructions** for each equipment.
- Replace PPE immediately if it is **damaged, worn, or expired**.

Summary Table: PPEs and Fall Protection Systems

Category	Type/Item	Purpose/Function
PPE	Full-Body Harness	Arrests fall safely by distributing impact force
	Hard Hat with Chin Strap	Head protection during falls or from falling objects
	Safety Footwear	Prevents slips and protects feet
	Gloves	Enhances grip and protects hands
	High-Visibility Vest	Improves visibility
	Eye Protection	Shields eyes from debris/dust
	Hearing Protection	Reduces noise-induced hearing damage
	Respirators/Dust Masks	Prevents inhalation of dust or harmful particles
Fall Protection System	Fall Arrest System	Stops a fall mid-air
	Fall Restraint System	Prevents reaching the fall hazard
	Work Positioning System	Enables secure, hands-free work at height
	Guardrails and Toe Boards	Prevents unintentional edge falls
	Safety Nets	Catches falling personnel/materials
	Lifeline Systems (HLL/VLL)	Continuous tie-off for movement
	Anchor Points	Secure connection for fall protection gear

PC-9: Judging Stability of Elevated Platforms

Objective

To ensure that elevated platforms used for work at height are stable, structurally safe, and free from collapse or tipping hazards. This helps protect workers from serious injuries and fatalities.

Definition of Elevated Platforms

Elevated platforms are work surfaces raised above ground level that allow access to height-based tasks. They include both fixed and mobile structures.

Common Types of Elevated Platforms and Stability Features

Type of Platform	Features That Influence Stability
Scaffold (Supported)	Base width, tie-ins to structure, plumb/level installation
Scaffold (Suspended)	Secure suspension, load balance, anchorage
Mobile Elevated Work Platforms (MEWPs)	Outriggers, platform level sensors, wheel locks
Ladders	Non-slip base, correct angle, top support
Access Towers	Bracing, adjustable feet, locking castors

Key Stability Factors

Stability Factor	Details & Best Practices
Load Capacity	Do not exceed rated capacity (includes worker, tools, materials)
Base Support & Surface	Must be flat, level, and firm; soft soil may require base plates or sole boards
Height-to-Base Ratio	Should not exceed a 4:1 height-to-base width ratio (especially for freestanding units)
Weather Conditions	Wind speeds >28 km/h can make platforms unstable; avoid work during storms or rain
Outriggers & Stabilizers	Must be fully deployed and locked before use

Stability Factor	Details & Best Practices
Guardrails & Toe Boards	Improve fall protection and structural integrity
Platform Levelling	Use inbuilt level indicators or manually check using a spirit level
Brakes & Locks	Wheel brakes, base jacks, and platform locks must be functional
Anchoring	Tie off scaffolds or platforms to structures when working at height

Pre-Use Inspection Checklist

Inspection Item	Criteria for Pass
Platform base surface	Firm, level, and free of debris
Outriggers and stabilizers	Fully extended, locked, and properly adjusted
Load check	No overloading; load within platform capacity
Wind/weather check	Work paused during heavy wind, rain, or storm
Structural integrity	No visible cracks, rust, damaged joints, or welds
Fall protection	Guardrails, harness points, and PPE in place
Braking and locking system	Fully functional, especially for MEWPs and mobile towers

Risk Mitigation Practices

- **Never overload** the platform.
- **Train workers** on platform use and emergency evacuation.
- Use **fall protection PPE** (harnesses, lifelines).
- Avoid using elevated platforms in **extreme weather**.
- Implement **routine maintenance** schedules.
- **Barricade the base area** to prevent collisions or ground disturbance.
- Ensure **visual/voice communication** for team coordination.

Comparison Table: Scaffolds vs. MEWPs vs. Ladders

Criteria	Scaffolds	MEWPs	Ladders
Mobility	Fixed or semi-mobile	Fully mobile (powered)	Portable
Stability Tools	Base plates, ties, braces	Outriggers, brakes, sensors	Non-slip feet, angle setup
Fall Protection	Guardrails, toe boards	Guardrails, harness tie-offs	Requires user harness or support
Height Range	Up to multi-storey	10–40 feet typically	Short tasks (6–15 feet)
Load Capacity	High (multiple workers/tools)	Moderate	Low

Summary Table

Element	Description
Goal	To ensure elevated platforms remain safe and stable
Applies To	Scaffolds, MEWPs, ladders, towers, suspended platforms
Key Factors	Load, base support, outriggers, weather, height ratio
Safety Features	Guardrails, fall protection, brakes, anchoring
Inspection Prior to Use	Platform surface, load capacity, mechanical locks, structure integrity
Worker Responsibilities	Use PPE, inspect before use, report hazards
Supervisor Duties	Train users, approve setup, enforce safety standards

PC-11: Provisions as per Regulations

Introduction

Ensuring workplace safety and health is governed by a range of laws, codes, and regulations formulated at national and international levels. These provisions establish minimum standards to protect workers from hazards, prevent accidents, and promote a safe working environment.

Compliance with these regulations is **mandatory** for employers and workers, and failure to adhere can lead to legal penalties, accidents, and loss of reputation.

Purpose of Regulatory Provisions

- To standardize safety practices across industries.
- To reduce workplace injuries and illnesses.
- To ensure accountability of employers in providing safe work conditions.
- To protect the rights of workers to a safe environment.
- To establish mechanisms for enforcement and penalties.

Key Regulatory Frameworks and Their Provisions

Regulation / Code	Scope & Key Provisions
Factories Act, 1948 (India)	Safety in factories: machinery safety, cleanliness, welfare, working hours, hazardous processes. Mandates safety officers in large factories.
Occupational Safety, Health and Working Conditions (OSHWC) Code, 2020 (India)	Consolidates laws for occupational safety and health. Addresses work conditions, hazard controls, PPE, welfare, and safety training.
Building and Other Construction Workers (BOCW) Act, 1996	Health and safety of construction workers, welfare measures, registration of workers, safety equipment, first aid, and emergency preparedness.
International Labour Organization (ILO) Conventions	Provide international standards on occupational safety and health management systems, risk assessment, and worker participation.

Regulation / Code	Scope & Key Provisions
OSHA (Occupational Safety and Health Administration, USA)	Requires employers to maintain safe workplaces through hazard communication, PPE, training, emergency plans, and recordkeeping.
Environmental Protection Laws	Control exposure to harmful substances, waste management, pollution prevention in workplaces.
Local State/Provincial Regulations	May include additional rules on working hours, noise limits, hazardous materials, etc.

Core Elements of Regulatory Provisions

Risk Assessment and Hazard Identification

- Mandatory regular risk assessments to identify and mitigate hazards.
- Documentation of identified risks and control measures.
- Continuous monitoring for new hazards.

Provision of Personal Protective Equipment (PPE)

- Employers must provide appropriate, certified PPE at no cost.
- Training on PPE usage, maintenance, and storage.
- Regular inspection and replacement of PPE.

Safety Training and Awareness

- Periodic safety induction and refresher training for all workers.
- Display of safety signage and emergency instructions.
- Promotion of a safety culture through engagement and communication.

Emergency Preparedness

- Implementation of emergency exit routes, fire alarms, and firefighting equipment.
- Conducting regular emergency drills.
- Availability of first aid facilities and trained personnel.

Health Surveillance and Medical Examination

- Periodic medical check-ups tailored to job risks.
- Monitoring exposure to toxic substances.
- Recordkeeping of health status and incidents.

Record Keeping and Reporting

- Maintaining accident/incident reports.
- Reporting serious accidents to authorities.

- Documentation for audits and inspections.

Responsibilities Under Regulations

Role	Responsibilities
Employers	Ensure compliance, provide PPE, conduct training, maintain records
Workers	Follow safety rules, use PPE properly, report hazards
Safety Officers	Implement safety programs, conduct inspections, report issues
Government Inspectors	Conduct audits, enforce regulations, issue penalties

Consequences of Non-Compliance

- **Legal penalties:** Fines, imprisonment, closure orders.
- **Increased accidents:** Injury, disability, death.
- **Financial losses:** Compensation, lawsuits, downtime.
- **Reputational damage:** Loss of business and trust.

Best Practices for Ensuring Compliance

- Establish a **Safety Management System** aligned with regulatory requirements.
- Regularly update policies as per latest regulations.
- Engage employees in safety committees.
- Conduct mock inspections and internal audits.
- Use technology for hazard tracking and training (e-learning, apps).

Summary Table

Aspect	Details
Objective	Ensure workplace safety by complying with legal provisions
Applicable Regulations	Factories Act, OSHWC Code, BOCW Act, OSHA, ILO Standards
Key Provisions	Risk assessment, PPE, training, emergency preparedness, health surveillance, recordkeeping
Stakeholders	Employers, workers, safety officers, government authorities
Compliance Actions	Conduct risk assessments, provide PPE, train workers, maintain documentation, report incidents
Consequences of Non-Compliance	Legal penalties, accidents, financial losses, reputational harm
Best Practices	Safety management systems, employee engagement, audits, technology use

Recognize Incompatible Health Conditions

Introduction

Recognizing incompatible health conditions in the workplace is crucial to ensure worker safety, prevent aggravation of illnesses, and avoid workplace accidents caused by health impairments. Some health conditions can directly affect the ability to safely perform certain tasks or operate machinery.

Purpose

- To identify health conditions that may impair job performance.
- To protect individuals and co-workers from harm.
- To guide appropriate job placement or restrictions.
- To promote timely medical interventions or referrals.

Common Incompatible Health Conditions

Health Condition	Impact on Work Safety	Examples of Incompatibility
Cardiovascular diseases	Risk of sudden incapacitation, fainting, or fatigue	Jobs requiring strenuous physical activity or heights
Epilepsy and seizure disorders	Risk of sudden seizures, loss of consciousness	Operating heavy machinery, driving, working at heights
Respiratory diseases (e.g., asthma, COPD)	Reduced oxygen capacity, risk of exposure to irritants	Work in dusty, chemical, or poorly ventilated environments
Vision impairments	Reduced ability to detect hazards, read gauges/signs	Precision work, operating machinery, driving
Hearing impairments	Impaired ability to hear alarms, warnings	Work requiring audio alerts or communication
Diabetes (poorly controlled)	Risk of hypoglycaemia, dizziness	Operating machinery, driving
Mental health disorders	Impaired concentration, judgment, or emotional stability	Safety-critical tasks, emergency response roles
Musculoskeletal disorders	Reduced mobility, strength, or endurance	Manual handling, climbing, repetitive tasks
Skin diseases or allergies	Sensitivity to chemicals or irritants	Handling chemicals or exposure to allergens
Substance abuse	Impaired cognitive and motor functions	All safety-sensitive jobs

Methods to Recognize Incompatible Conditions

- Pre-placement medical examination (baseline health status).
- Periodic health surveillance during employment.
- Observation by supervisors for signs like dizziness, fatigue, confusion.
- Self-reporting by employees encouraged and confidential.
- Use of screening questionnaires and checklists for known conditions.
- Referral to occupational health professionals when concerns arise.

Actions on Identifying Incompatible Conditions

- Restrict or modify work duties.
- Provide accommodations or alternative roles.
- Initiate medical treatment or monitoring.
- Educate workers about managing their health conditions.

- Maintain confidentiality and support without discrimination.

Legal and Ethical Considerations

- Adherence to health privacy laws.
- Non-discrimination in employment.
- Reasonable accommodation as per regulations.
- Ensuring safety without stigmatizing employees.

Summary Table

Aspect	Details
Objective	Identify health conditions incompatible with job safety
Key Conditions	Cardiovascular, epilepsy, respiratory, vision/hearing, diabetes, mental health, musculoskeletal, skin, substance abuse
Recognition Methods	Medical exams, surveillance, supervisor observation, self-reporting, screening tools
Actions	Work restriction/modification, treatment, accommodation, education
Considerations	Confidentiality, non-discrimination, legal compliance

Medical Screening Procedures

Introduction

Medical screening procedures are systematic health evaluations to identify existing or potential health issues that could affect job performance or safety. These procedures help in early detection of occupational diseases, fitness assessment, and monitoring ongoing health status.

Purpose

- To assess fitness for specific job roles.
- To detect occupational illnesses early.
- To prevent workplace accidents caused by health issues.
- To comply with statutory health regulations.
- To support worker health and wellbeing.

Types of Medical Screening

Screening Type	Description	Purpose/Use
Pre-employment screening	Medical exams before hiring	Establish baseline health, identify incompatible conditions
Periodic health screening	Regular exams during employment	Monitor health status, detect early signs of occupational diseases
Return-to-work screening	After illness/injury absence	Assess fitness to resume duties
Specialized screening	For high-risk jobs (e.g., respiratory, hearing tests)	Identify specific occupational risks
Exit screening	On termination of employment	Identify occupational illnesses for compensation claims

Components of Medical Screening

- Medical History Review: Past illnesses, family history, exposure history.
- Physical Examination: Vital signs, cardiovascular, respiratory, neurological assessment.
- Laboratory Tests: Blood tests, urine analysis, pulmonary function tests.
- Functional Tests: Vision and hearing tests, lung function, fitness for physical work.
- Questionnaires: Self-reported symptoms, lifestyle factors (smoking, alcohol).
- Imaging Tests (if required): Chest X-rays, ECGs.

Screening Procedure Steps

1. **Planning:** Identify the purpose and scope, job-related health risks.
2. **Informed Consent:** Explain procedures and confidentiality.
3. **Conduct Screening:** Using qualified occupational health personnel.
4. **Record Findings:** Maintain confidential medical records.
5. **Evaluate Results:** Determine fitness, recommend follow-up or restrictions.
6. **Feedback to Employee:** Provide advice, referrals if necessary.
7. **Follow-up Actions:** Treatment, accommodations, or job modifications.

Legal and Ethical Aspects

- Consent and confidentiality.
- Use of results only for job-related decisions.
- Compliance with labour and health laws.
- Avoid discrimination based on medical results.

Summary Table

Aspect	Details
Objective	Identify health status and fitness for job safety
Screening Types	Pre-employment, periodic, return-to-work, specialized, exit
Components	History, physical exam, lab tests, functional tests, questionnaires
Procedure Steps	Planning, consent, screening, recordkeeping, evaluation, feedback, follow-up
Legal/Ethical Considerations	Consent, confidentiality, non-discrimination, lawful use

Review & Summary

1. Risks and Challenges While Working at Height

- **Common Risks**: Falls from ladders, scaffolds, rooftops, or elevated platforms.
- **Challenges**: Slippery surfaces, unstable platforms, improper equipment use, adverse weather, and poor visibility.
- **Contributing Factors**: Lack of training, fatigue, inappropriate PPE, and health-related issues.

2. Safety Measures and Precautions

- **Pre-Work Assessment**: Conduct site-specific risk assessment and job safety analysis.
- **Planning**: Ensure proper planning of access routes, anchor points, and rescue methods.
- **Safe Work Practices**: Use fall protection systems, follow lock-out/tag-out procedures, and ensure good housekeeping.
- **Training**: Regular safety training on fall hazards, equipment usage, and emergency response.

3. PPE and Fall Protection Systems

- **Personal Protective Equipment (PPE)**:
    - Safety harness with shock-absorbing lanyards.
    - Helmets with chin straps.
    - Non-slip footwear.
    - Gloves with good grip.
- **Fall Protection Systems**:
    - Full-body harness with double lanyard.
    - Guardrails and toe boards on platforms.
    - Fall Arrest Systems (e.g., SRL - Self-Retracting Lifeline).
    - Safety nets in high-exposure areas.

4. Stability of Elevated Platforms

- **Judging Stability**:
  - Ensure solid foundation and load-bearing capacity.
  - Platforms must be level, secured, and inspected.
  - Use outriggers or stabilizers when needed.
- **Scaffold and Ladder Safety**:
  - Conform to standard load ratings.
  - Avoid overreaching and sudden movements.
  - Only trained personnel should erect scaffolds.

5. Legal Provisions and Regulatory Compliance

- **As per Regulations (e.g., OSHA, IS Codes)**:
  - Mandatory use of fall protection at heights above 1.8 meters (6 feet).
  - Regular inspection and maintenance of equipment.
  - Employers must provide proper training and PPE.
  - Maintain compliance with local labour and safety regulations.

6. Health Conditions and Medical Screening

- **Incompatible Health Conditions**:
  - Vertigo, epilepsy, uncorrected vision problems, and cardiovascular issues.
- **Medical Screening Procedures**:
  - Pre-employment and periodic fitness assessments.
  - Documentation and clearance by a certified occupational health professional.
  - Immediate disqualification of unfit workers from height-related tasks.

Case Study: Fall Prevention and Equipment Selection

Build Right Constructions faced several near-miss fall incidents on their multi-story construction site due to missing guardrails, old ladders, and inconsistent use of fall protection harnesses.

Problem:
Unsafe scaffolding, outdated ladders without slip resistance, and lack of proper fall protection equipment usage and training increased the risk of falls.

Actions:

- Conducted risk assessment to identify fall hazards.
- Replaced old ladders and installed missing guardrails on scaffolds.
- Selected compliant, ergonomic harnesses and fall arrest systems.
- Provided training on equipment use and fall hazard awareness.
- Implemented regular equipment inspection and safety audits.

Outcome:
Near-miss incidents dropped by 80%, worker compliance improved, and safety inspections were passed with commendation.

Model Questions

1. **Inspecting a Harness:**
   Demonstrate how to properly inspect a full-body safety harness before use. Identify any signs of wear, damage, or defects that would make the harness unsafe.

2. **Selecting Fall Protection:**
   Given a work scenario where a worker needs to access a roof 12 feet above ground level using a ladder, choose the appropriate fall prevention equipment and explain your choice.

3. **Installing Guardrails:**
   Show how to correctly install guardrails on an elevated platform. Explain the key components that must be included to ensure fall prevention.

4. **Using a Ladder Safely:**
   Demonstrate the correct method for setting up and climbing a portable ladder safely to prevent falls.

5. **Responding to Equipment Failure:**
   During a site inspection, you find a damaged lanyard. Explain the steps you would take to address this issue and ensure worker safety.

Conclusion

Effective fall prevention is crucial to ensuring worker safety in any environment involving elevated work. Selecting the right fall protection equipment—such as guardrails, harnesses, ladders, and shock-absorbing devices—based on a thorough risk assessment helps minimize fall hazards. Regular inspection, proper training, and adherence to safety standards not only reduce the risk of injuries but also promote a culture of safety and compliance on the job site. Ultimately, proactive fall prevention and thoughtful equipment selection save lives and improve overall workplace productivity.

Module 2: Module 2: Fall Safety Procedures and Measures

Introduction

Falls are one of the leading causes of serious injuries and fatalities in workplaces, especially in construction, maintenance, and industrial settings. Implementing effective fall safety procedures and measures is essential to protect workers operating at heights or near fall hazards. These procedures include identifying potential fall risks, using appropriate fall protection systems, providing proper training, and ensuring regular equipment inspections. By establishing a strong fall safety program, organizations can prevent accidents, ensure compliance with safety regulations, and create a safer working environment for all employees.

Scope of the Module

This module is designed to provide comprehensive knowledge and practical skills related to fall safety in the workplace. It focuses on identifying fall hazards, understanding fall protection systems, and implementing effective safety measures to prevent accidents. The module applies to a wide range of industries where work at height is performed, including construction, manufacturing, maintenance, and warehousing.

Key areas covered include:

- Identification and assessment of fall hazards
- Types and proper use of fall protection systems (guardrails, personal fall arrest systems, safety nets, etc.)
- Selection, inspection, and maintenance of fall protection equipment
- Safe work practices when working at heights (ladders, scaffolds, roofs, etc.)
- Legal and regulatory standards (e.g., OSHA, ANSI)
- Training requirements and responsibilities of workers and supervisors
- Emergency procedures and incident response related to falls

Learning Outcomes

1. **Identify** common fall hazards in various work environments, particularly during work at heights.
2. **Understand** the principles of fall prevention and the importance of implementing effective safety measures.
3. **Select and use** appropriate fall protection systems and personal protective equipment (PPE), such as harnesses, lanyards, guardrails, and safety nets.
4. **Inspect and maintain** fall protection equipment according to safety standards and manufacturer guidelines.
5. **Apply** safe work procedures while using ladders, scaffolds, elevated platforms, and other access equipment.
6. **Comply** with relevant legal and regulatory requirements (e.g., OSHA, ANSI) related to fall safety.
7. **Demonstrate** the correct response to fall incidents and implement basic emergency procedures.
8. **Promote** a culture of safety by encouraging proper use of fall prevention methods and active hazard reporting.

Precautions on Ascending/Descending

Introduction

Ascending and descending during work tasks—whether on ladders, stairways, scaffolds, or elevated platforms—is a common but high-risk activity. Falls while climbing or descending are among the leading causes of workplace injuries and fatalities. This unit focuses on understanding, implementing, and monitoring safe practices to prevent such incidents.

Common Hazards

Hazard Type	Examples
Physical Condition	Damaged or slippery rungs/steps, unstable surfaces
Human Factors	Fatigue, distraction, haste, overreaching, improper use
Equipment Issues	Faulty ladders, unsecured scaffolding, broken steps
Environmental Factors	Poor lighting, rain, wind, electrical hazards, uneven ground

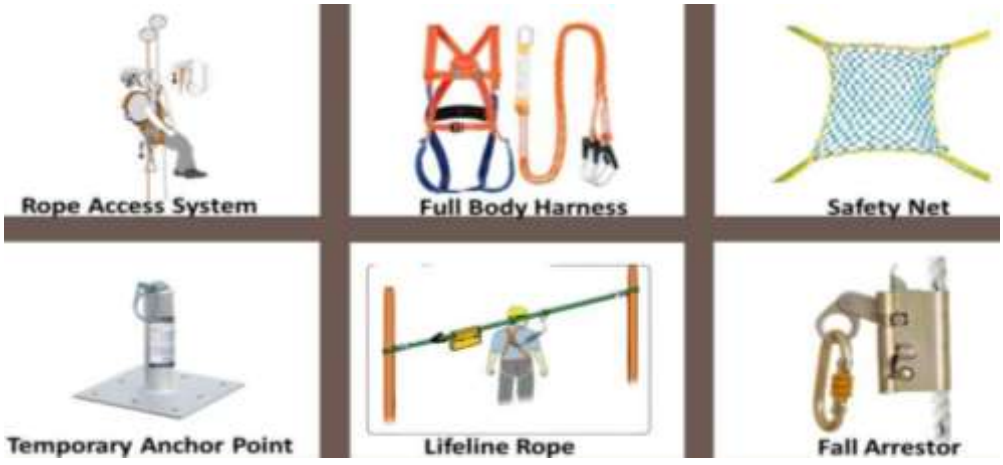
General Precautions

A. Pre-Use Checks

- Inspect ladders, stairs, and platforms for:
  - Cracks, corrosion, or bends
  - Missing or loose rungs/steps
  - Dirt, oil, or slippery substances
- Verify stability and secure footing before use
- Ensure adequate lighting in the area
- Communicate the intention to ascend/descend if in a shared space
- Wear appropriate PPE (helmet, non-slip footwear, harness if required)

B. Safe Climbing Practices

- Always **face the ladder or stairs** while ascending or descending
- Always maintain three points of contact
- Use **tool belts or hoist systems** instead of carrying tools in hand
- Climb **slowly and deliberately**; avoid sudden movements



- Never overreach or lean sideways—keep your body cantered
- Do not use ladders or access points in strong winds or storms

C. Equipment-Specific Precautions

- **Ladders**:
  - Angle ratio should be 1:4 (1 foot out for every 4 feet up)
  - Never stand on the top two rungs
  - Use non-conductive ladders around electricity
- **Stairs**:
  - Keep handrails clear and grip them while moving
  - Avoid running or skipping steps
- **Scaffolds**:
  - Use designated access ladders or stair towers
  - Ensure all planks are secured and clean
  - Don’t climb scaffold frames unless designed for access

Do's and Don'ts

Do's	Don'ts
Always maintain 3-point contact	Never jump from elevated surfaces
Inspect equipment before use	Don’t use damaged or makeshift ladders
Face the surface when ascending or descending	Avoid using ladders in high winds or storms
Use both hands to grip rails or ladder side rails	Don’t carry heavy loads in your hands while climbing
Wear suitable PPE (helmet, shoes, harness)	Don’t climb if feeling unwell, tired, or distracted

Emergency Readiness

- Be aware of the emergency response plan for fall incidents
- Ensure first aid kits and fall arrest rescue equipment are accessible
- Report any near-misses or hazards immediately to supervisors
- Participate in fall rescue drills

Regulatory References

Regulation Code	Description
OSHA 1910/1926	General industry & construction fall safety rules
ANSI A14	Safety requirements for portable ladders
IS 3696 (Part 1)	Indian standards for scaffolding and ladder use
ISO 45001	Occupational health and safety management systems

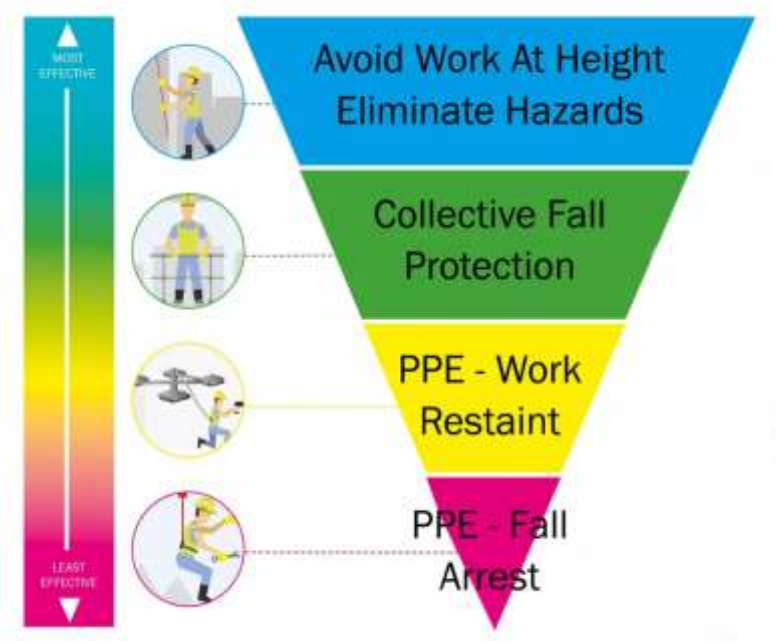
Summary Table:

Aspect	Key Points
Preparation	Inspect equipment, wear PPE, ensure stable ground and lighting
During Ascent/Descent	Maintain 3-point contact, face ladder/stairs, climb slowly, avoid overreach
Equipment Use	Proper ladder angle, secure scaffolds, use handrails and tool belts
Hazard Avoidance	Don't use damaged tools, avoid distractions and adverse weather
Post-Use	Clean equipment, report defects, store properly
Regulatory Compliance	Follow OSHA, ANSI, IS standards

Measures to Protect Persons Below

Introduction

When work is carried out at height—on scaffolding, rooftops, ladders, or elevated platforms—there is a significant risk of tools, materials, or debris falling and causing injury to individuals below. This performance criterion focuses on implementing effective protective measures to safeguard workers and bystanders from falling objects and debris.



Key Risks to Persons Below

- Injuries caused by falling tools, bolts, fasteners, or sharp objects
- Head injuries due to large or high-velocity impacts
- Slipping on debris or scattered materials from overhead work
- Inability to detect or avoid falling objects in time
- Injuries due to structural collapse or material ejection during cutting/grinding

Core Protective Measures

A. Barricading and Signage

- Install **hard barricades** or **warning tape** around the fall zone below elevated work
- Use clear **warning signage** (e.g., "Work Overhead – Keep Out")
- Restrict **unauthorized access** to the drop zone
- Maintain adequate **buffer zones** beyond the immediate work area

B. Tool and Material Securing

- Use **tool lanyards** or tethers to prevent tools from falling
- Secure all materials with **ropes, nets, clamps, or containers**
- Avoid placing tools/materials near platform or ladder edges
- Don't overload or loosely stack materials at elevation

C. Protective Equipment for Persons Below

- Enforce the use of **hard hats** for all workers and visitors in the fall zone
- Provide **visibility vests** for increased awareness
- Use **chin straps** on helmets in windy conditions

D. Overhead Protection Structures

- Install **toe boards** on scaffolding and platforms
- Use **debris nets** or **catch platforms** beneath the worksite
- Erect **canopies** or **covered walkways** in pedestrian zones
- Use **mesh screens or panels** to contain loose materials

E. Work Scheduling and Supervision

- Schedule overhead work during **low-traffic periods** or outside working hours
- Assign a **spotter or safety supervisor** to monitor the area
- Maintain **communication** between workers above and below
- Conduct **pre-task briefings** to discuss object-drop risks and mitigation

Maintenance and Monitoring

- Inspect all **safety nets, guardrails, and canopies** before and after work
- Regularly check and replace **damaged tool lanyards and fasteners**
- Keep **walkways and work areas clean** of debris
- Record and report any **incidents or near-misses** for future prevention

Legal & Regulatory Requirements

Standard/Authority	Requirement Description
OSHA 1926.759(a)	Protection from falling objects in steel erection
ANSI/ISEA 121-2018	Dropped Object Prevention Solutions
IS 5175 (India)	Code of practice for safety in working at heights
ISO 45001	General occupational health and safety risk controls

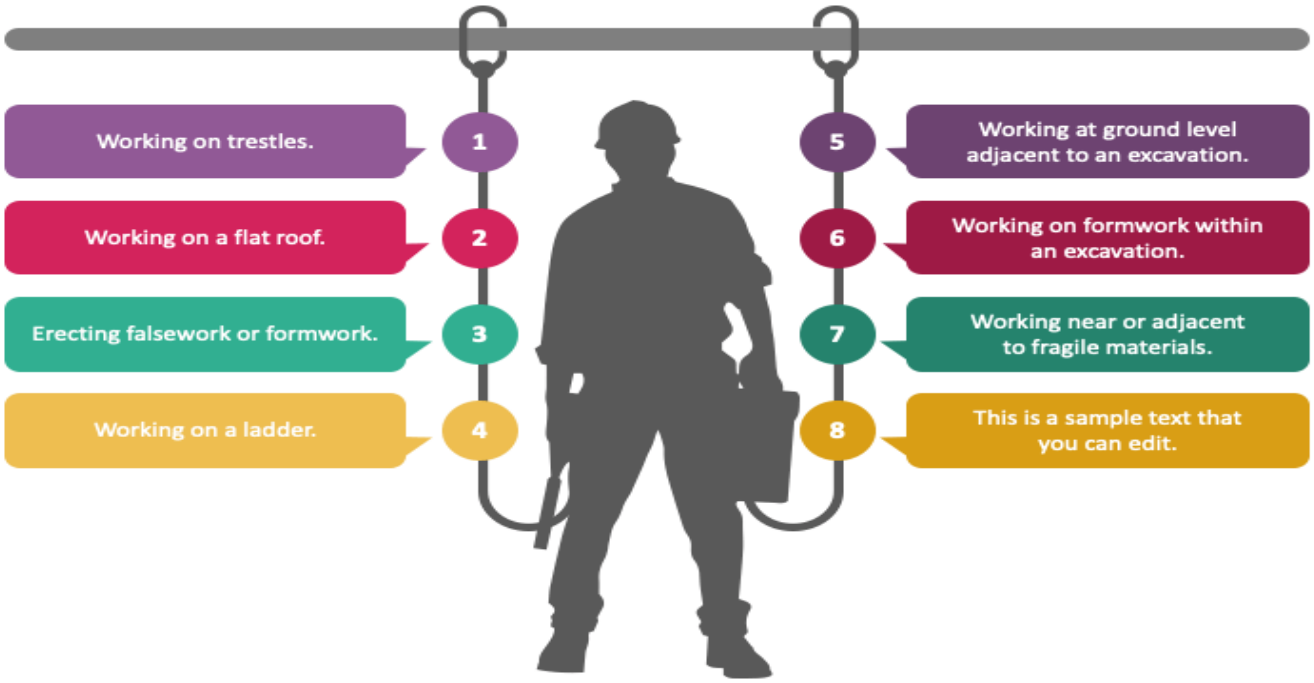
Summary Table

Protective Measure	Action Steps/Notes
Barricading	Set up physical barriers and warning signage
Tool Tethering	Use lanyards, pouches, magnetic trays for small items
Material Securing	Avoid edge stacking, use nets and containers
PPE for Workers Below	Mandatory use of helmets with chin straps and visibility vests
Overhead Shields	Install toe boards, mesh nets, and debris catchers
Time-based Controls	Schedule work to avoid congestion underneath
Supervision & Training	Assign monitors, conduct briefings, and enforce safe behaviour

PC-6: Ground-Level Safety Measures

Introduction

While fall protection often focuses on elevated work, safety at **ground level** is equally vital. Workers at ground level are at risk from falling objects, trip hazards, unstable surfaces, and interaction with mobile equipment or overhead operations. This section covers comprehensive ground-level safety protocols to reduce these risks and ensure safe movement and work on the ground.



Key Ground-Level Hazards

Hazard Category	Examples
Trip/Slip Hazards	Unsecured cables, uneven surfaces, wet or oily floors
Falling Objects	Tools/materials dropped from scaffolds or ladders above
Obstructed Pathways	Construction debris, improper material storage
Mobile Equipment	Forklifts, cranes, moving vehicles operating near foot traffic
Environmental	Poor lighting, cluttered work zones, loose gravel, mud

Ground-Level Safety Measures

A. Housekeeping and Cleanliness

- Keep pathways and work areas **clean, dry, and free of obstacles**
- Regularly **remove debris, scrap, and unused tools**
- Place warning signs near **wet or slippery surfaces**
- Use **non-slip mats or coatings** where necessary

B. Walkway and Access Path Management

- Designate and **mark safe walkways** with reflective tape or paint
- Ensure pathways are **wide enough** and free of sharp turns
- Provide **separate lanes for workers and vehicles**, if applicable
- Install **temporary barriers** around hazards or work zones

C. Protection from Falling Objects

- Mark and cordon off **drop zones** around elevated work areas
- Install **overhead protection** (canopies, toe boards, safety nets)
- Enforce the use of **hard hats** in designated areas

D. Safe Material Storage

- Stack materials **evenly and securely** away from walkways
- Avoid **overhead storage** unless properly enclosed
- Use **racks or shelving systems** to prevent spills or tip-overs

E. Lighting and Visibility

- Ensure **adequate lighting** in all ground-level work and access areas
- Use **emergency lighting** where needed
- Workers should wear **high-visibility clothing**

F. Use of Personal Protective Equipment (PPE)

- **Hard hats**, **safety shoes**, and **visibility vests** must be worn
- Provide **gloves, eye protection, or respiratory gear** depending on task
- Replace damaged PPE immediately

G. Traffic Management and Vehicle Safety

- Use **spotters and flaggers** when moving equipment in crowded areas

- Post **speed limit signs** and stop points inside the site
- Provide **mirrors, alarms, and reflective markers** on vehicles
- Implement **reverse warning systems** for moving machinery

H. Training and Awareness

- Conduct regular **toolbox talks** and **safety drills**
- Provide **ground hazard identification training** to all workers
- Encourage **incident reporting** and feedback mechanisms

Monitoring and Supervision

- Appoint a **ground safety officer or supervisor**
- Conduct **daily inspections** of walkways and drop zones
- Use **checklists and logs** for tracking hazard correction
- Monitor compliance with **PPE and access control policies**

Regulatory Compliance and Standards

Standard/Authority	Requirement Description
OSHA 1910 Subpart D	**Walking-working surfaces and housekeeping rules**
IS 3696 (Part 2)	**Indian standard for safety at ground-level construction sites**
ISO 45001	**General occupational health and safety management**
ANSI A1264.2	**Standard for walkway and working surface safety**

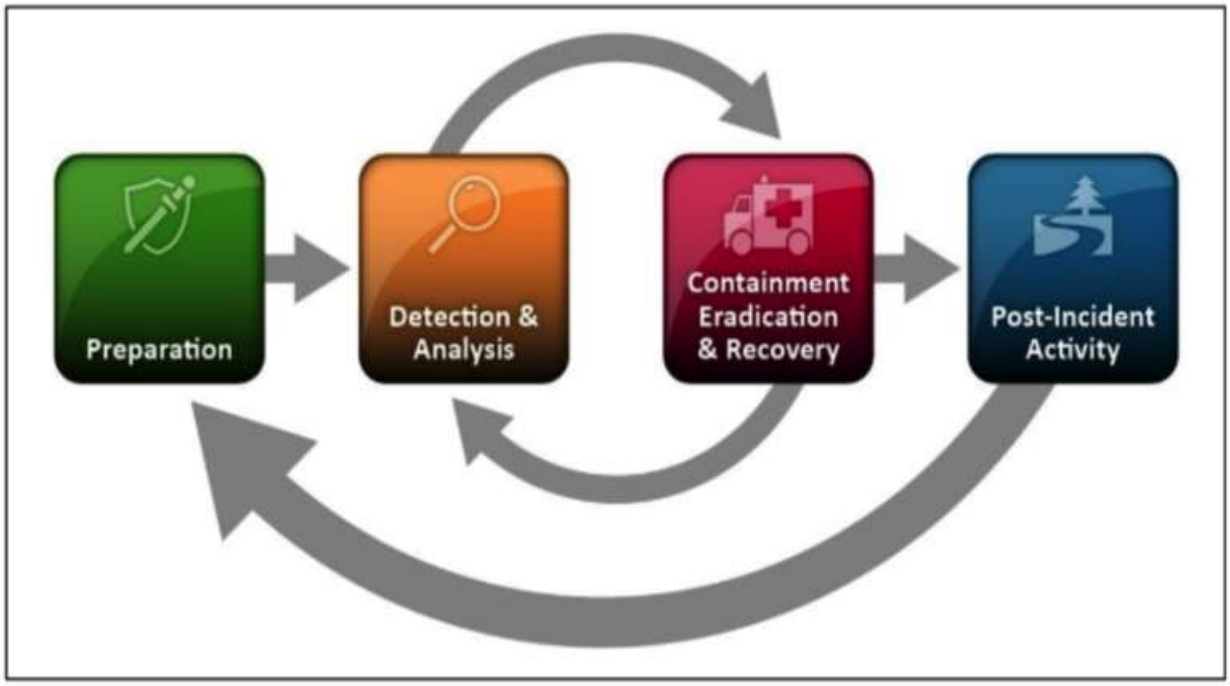
Summary Table

Area of Focus	Key Measures
Housekeeping	Keep surfaces dry, remove clutter, use warning signage
Walkways	Mark paths, install barriers, ensure surface stability
Falling Object Protection	Overhead nets, hard hats, exclusion zones
Material Storage	Stack securely, use racks, avoid high stacking near edges
Lighting	Use task lighting, emergency lights, and ensure visibility
Traffic Safety	Designate lanes, use alarms and mirrors, assign flaggers
PPE Compliance	Hard hats, boots, gloves, and high-vis gear mandatory
Training & Supervision	Toolbox talks, inspection routines, incident reporting

PC-7: Identify Causes and Negligence

Understanding Incidents

An **incident** is an unplanned event that causes or could cause injury, illness, damage, or environmental harm. It includes accidents and near-misses.



Causes of Incidents

- **Unsafe Acts:** Actions by individuals that increase risk, such as:
  - Not wearing PPE
  - Ignoring safety procedures
  - Using equipment improperly
- **Unsafe Conditions:** Hazardous physical or environmental factors, such as:
  - Faulty machines

    - Poor lighting
    - Slippery floors
- **Root Causes:** Underlying system failures, such as:
    - Inadequate training
    - Lack of supervision
    - Poor safety policies

Negligence

- Defined as a **failure to take reasonable care** to prevent harm.
- Includes actions like ignoring safety rules, failing to report hazards, or skipping maintenance.
- Negligence can be by workers, supervisors, or management.

Process to Identify Causes and Negligence

1. **Observe** workplace practices and conditions.
2. **Investigate** incidents/near-misses: secure area, collect evidence, interview witnesses.
3. Use **Root Cause Analysis** tools like:
    - 5 Whys
    - Fishbone (Ishikawa) Diagram
4. Identify unsafe acts, unsafe conditions, and negligence.
5. Document findings and recommend corrective actions.

Why Identification is Important

- Prevents future incidents
- Enhances safety culture
- Ensures legal compliance
- Protects workers and property

Preventing Negligence

- Conduct regular safety training
- Enforce safety policies consistently
- Encourage reporting of hazards
- Perform routine inspections and maintenance

Summary Table

Aspect	Description	Examples
Unsafe Acts	Risky actions by people	Not using PPE, bypassing guards
Unsafe Conditions	Hazardous workplace environments	Slippery floors, faulty machines
Root Causes	Systemic failures or management lapses	Lack of training, poor supervision
Negligence	Failure to take reasonable care	Ignoring hazards, skipping checks

PC-8: Reporting Hazards

What is a Hazard?

A **hazard** is anything that has the potential to cause harm to people, property, or the environment.

Common Workplace Hazards:

- **Physical:** Slips, trips, falls, sharp tools
- **Chemical:** Toxic fumes, spills, cleaning agents
- **Biological:** Mold, bacteria, viruses
- **Ergonomic:** Poor posture, repetitive strain
- **Electrical:** Exposed wires, faulty outlets
- **Fire-related:** Flammable materials, blocked exits

Importance of Reporting Hazards

- Prevents **accidents and injuries**
- Supports a **proactive safety culture**
- Ensures **corrective actions** are taken in time
- Meets **legal and *regulatory*** obligations

When to Report a Hazard

Report a hazard as soon as it is identified, even if:

- No injury has occurred
- It's a “near miss”
- You're unsure of the risk level

How to Report Hazards Effectively

Step-by-Step Procedure:

1. **Identify** the hazard clearly
2. **Assess** if it poses immediate danger
3. **Take immediate control** (if safe to do so):
    - Isolate the hazard (e.g., mark the area, switch off power)
    - Warn coworkers
4. **Report** using the correct channel:
    - Fill out hazard report form
    - Inform supervisor or safety officer
    - Use digital apps if available (e.g., QR codes, online portals)
5. **Follow up** to check if the issue was resolved

Key Elements in a Hazard Report

- Location of hazard

- Description of the hazard
- Who/what is at risk
- Time and date observed
- Suggested corrective action (if any)

What Happens After Reporting?

- Safety team reviews and classifies the hazard
- Investigation is done (if needed)
- Corrective/preventive actions are taken
- Record is maintained for audits
- Feedback is provided to the person who reported

Worker Responsibilities

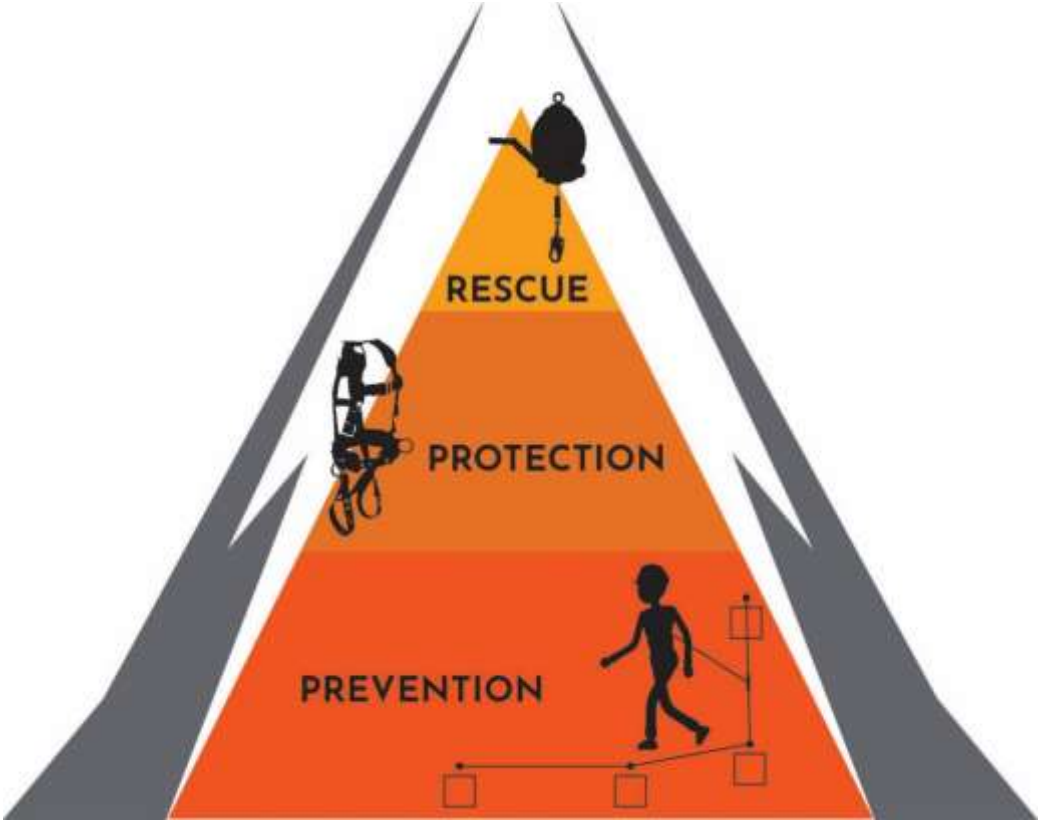
- Stay alert and observe surroundings
- Don’t ignore potential hazards
- Encourage others to report
- Know the procedure and whom to contact

Summary Table

Component	Details
Definition	Any source with potential to cause harm
When to Report	Immediately upon detection, even if minor or uncertain
How to Report	Use hazard form, app, or report to supervisor
What to Include	Description, location, date/time, risk level, suggested fix
Why It's Important	Prevent injuries, stay compliant, promote safety culture
Post-Reporting	Hazard is reviewed, investigated, corrected, and recorded

PC 10: Rescue Measures – Fall Safety Procedures and Measures

To ensure immediate and effective response to fall incidents by implementing proper rescue measures that minimize injury, prevent suspension trauma, and save lives.



Key Fall Safety Procedures

A. Risk Assessment and Planning

- Identify tasks involving work at height.
- Assess fall risks and identify potential fall zones.
- Develop a Rescue Plan as part of the Fall Protection Plan.

B. Prevention First

- Use engineering controls: guardrails, toe boards, barricades.
- Use administrative controls: work permits, supervision, signage.
- Implement **Personal Fall Arrest Systems (PFAS)**:
  - Full-body harness, shock-absorbing lanyard, anchorage point.
  - Ensure proper fit and daily inspection.

C. Equipment Preparedness

- Provide and maintain rescue kits on-site (e.g., tripods, winches, retrieval systems).
- Tag and inspect all fall protection and rescue equipment regularly.

Rescue Measures After a Fall

A. Rescue Plan Activation

- Alert trained rescue personnel immediately.

- Stop all work in the fall zone.
- Assess scene safety before attempting rescue.

B. Types of Rescues

1. **Self-Rescue**: Worker climbs back to safety if uninjured and able.
2. **Assisted Rescue**: Trained responder retrieves the fallen worker using a rescue system.
3. **Mechanized Rescue**: Use mechanical systems like winches, rope grabs, or aerial lifts.

C. Suspension Trauma Prevention

- Use **Suspension Trauma Straps** to relieve pressure.
- Limit hanging time—rescue within 5–10 minutes is critical.
- Keep the worker's legs moving (if conscious) to stimulate blood flow.

D. First Aid and Medical Support

- Assess the worker’s condition (check for consciousness, injuries, breathing).
- Provide immediate first aid if trained.
- Ensure prompt medical evaluation even if no injury is visible.

Training and Preparedness

- Train all workers at height on fall hazards and rescue techniques.
- Conduct regular **mock rescue drills** in real work settings.
- Appoint **rescue team members** and maintain an up-to-date contact list.

Documentation and Follow-Up

- Record the incident and rescue details thoroughly.
- Inspect and replace any equipment used in the fall or rescue.
- Conduct a root cause analysis and update the safety/rescue plan accordingly.
- Provide counselling or support to affected workers if needed.

PC-14: Avoid Work Under Unsafe Conditions

Objective

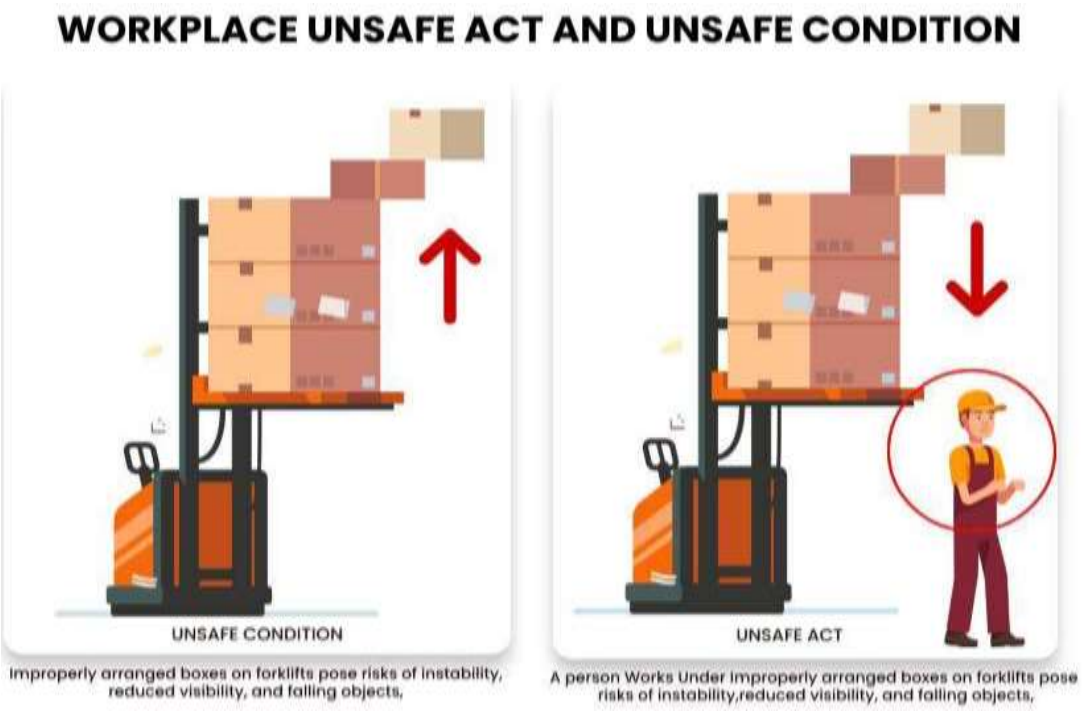
To ensure that workers recognize, report, and avoid engaging in tasks under hazardous or non-compliant conditions until the risks are mitigated.

Definition of Unsafe Work Conditions

Unsafe conditions are environmental, procedural, or equipment-related situations that pose immediate or potential hazards to health, safety, or life. These include but are not limited to:

- Poor lighting or ventilation
- Damaged tools or machinery

- Slippery, cluttered, or unstable work surfaces



- Exposed electrical wires
- Missing or ineffective safety guards
- Inadequate Personal Protective Equipment (PPE)
- Working at heights without fall protection
- Chemical leaks or uncontained hazardous substances
- Untrained personnel performing high-risk tasks

Worker Responsibilities

A. Pre-Work Inspection

- Conduct a visual and functional check of tools, machines, and work areas.
- Verify that safety systems (alarms, guards, PPE) are in place and operational.

B. Refuse Unsafe Work

- Do **not** begin or continue work if unsafe conditions are observed.
- Clearly inform the supervisor or safety officer about the concern.

C. Report Hazards

- Immediately report any unsafe condition or near-miss to the designated authority.
- Use established reporting channels (e.g., hazard cards, logbooks, mobile apps).

Employer Responsibilities

- Provide a safe and healthy work environment per legal and organizational standards.
- Ensure all safety equipment and procedures are maintained.
- Encourage a **“Stop Work Authority” (SWA)** culture—no retaliation for refusing unsafe work.
- Respond promptly to reported hazards and correct them before resuming work.

Communication and Signage

- Use **warning signs**, **barricades**, and **lock-out/tag-out** procedures to mark unsafe areas.
- Conduct toolbox talks or safety briefings daily to reinforce vigilance.

When to Stop Work Immediately

Workers must **immediately stop work** and notify supervisors when:

- Equipment malfunctions or breaks
- Structural instability is detected (scaffolding, ladders, platforms)
- A co-worker is injured or becomes unconscious
- Fire, explosion, or gas leak is suspected
- Required PPE is missing or defective

Training and Awareness

- Conduct regular training on:
  - Hazard identification
  - Risk assessment
  - Emergency response
  - Use of safety checklists
- Encourage peer-to-peer safety accountability.

Documentation and Review

- Maintain records of reported hazards, corrective actions taken, and timelines.
- Use data from reports to continuously improve safety protocols.

Review

Falls are one of the leading causes of serious work-related injuries and fatalities, especially in construction, maintenance, and industrial settings. Employers must establish comprehensive fall protection programs to prevent incidents. These programs should comply with national and international safety standards (e.g., OSHA, ISO 45001).

Key Fall Safety Procedures:

1. **Hazard Identification**
   - Conduct regular risk assessments to identify potential fall hazards (e.g., unprotected edges, floor openings, elevated platforms).
2. **Engineering Controls**
   - Install guardrails, covers on floor openings, and handrails.
   - Use scaffolding or aerial lifts where appropriate.
3. **Administrative Controls**
   - Develop safe work procedures and signage.
   - Implement permit-to-work systems for high-risk tasks.
4. **Personal Protective Equipment (PPE)**

- Use appropriate fall arrest systems (e.g., full-body harnesses, lanyards, anchor points).
- Inspect PPE regularly for wear and tear.

5. **Training & Awareness**
   - Provide workers with training on fall hazards, equipment use, and emergency procedures.
   - Conduct regular drills and refreshers.
6. **Emergency Response Planning**
   - Establish rescue procedures for fallen workers.
   - Ensure first aid and communication systems are accessible.

Summary

- **Falls** are a preventable but prevalent hazard in many workplaces.
- Implementing **fall protection systems**, ensuring **worker training**, and conducting **risk assessments** are essential to preventing injuries and fatalities.
- Regular **inspection of equipment**, **safety audits**, and **emergency preparedness** are key components of an effective fall safety program.

Case Study: Fall Incident at a Construction Site

Background:
A construction worker was assigned to install steel reinforcements on the third floor of an under-construction building. The worker was not using a harness, and the site lacked proper edge protection.

Incident:
The worker slipped on an unsecured wooden plank and fell approximately 20 feet. He sustained multiple fractures and was hospitalized for three months.

Investigation Findings:

- No guardrails or safety nets were installed.
- The worker was not provided with fall protection PPE.
- No formal safety training had been conducted.

Corrective Measures Taken:

- Mandatory use of personal fall arrest systems implemented.
- Guardrails and toe boards installed at all exposed edges.
- Workers received certified fall prevention training.
- Weekly site safety inspections initiated.

Lessons Learned:

- Employers must prioritize **proactive hazard control** and not wait for incidents to enforce safety.
- Comprehensive **training and supervision** are vital.
- A **fall prevention plan** should be developed and communicated before starting work at heights.

Conclusion

Fall safety procedures and measures are critical to protecting workers from one of the leading causes of workplace injuries and fatalities. Effective fall prevention relies on identifying hazards, implementing

engineering controls such as guardrails and safety nets, enforcing the use of proper personal protective equipment, and providing comprehensive training. Regular inspections, risk assessments, and emergency preparedness plans ensure that safety systems remain effective over time. By prioritizing fall safety, organizations create safer work environments, reduce accidents, and promote a culture of vigilance and responsibility among employees. Ultimately, consistent adherence to fall safety procedures saves lives and enhances overall workplace productivity.

CHECKLIST Basics of Safety Requirements in Working at Height

S.NO.	Safety Requirement	Description	Status (Yes/No/NA)	Remarks / Actions Needed
1.	Risk Assessment Conducted	Identify hazards related to working at height		
2.	Fall Protection Plan Available	Formal plan outlining fall prevention methods		
3.	Guardrails Installed	Guardrails or barriers in place at edges and openings		
4.	Personal Protective Equipment (PPE) Provided	Harnesses, lanyards, helmets, etc., available and used		
5.	PPE Inspected Regularly	PPE checked for damage before use		
6.	Safe Access Provided	Ladders, scaffolds, lifts or platforms safe and stable		
7.	Training Completed	Workers trained on fall hazards and equipment use		
8.	Supervision Ensured	Qualified supervision present during work at height		
9.	Weather Conditions Monitored	Work suspended or precautions taken in adverse weather		
10.	Emergency Rescue Plan Ready	Rescue procedures and equipment in place		
11.	Work Area Secured Below	Area under work is cordoned off to prevent injury		
12.	Tools and Materials Secured	Prevent tools/materials from falling		
13.	Communication System Available	Means to communicate emergency or hazards		
14.	Work Permit Issued (if required)	Formal authorization for work at height		

Model Questions

(SET A)

1. What is the primary risk associated with working at height?
   a) Electric shock
   b) Fall from height
   c) Slips on flat surfaces
   d) Noise pollution

2. Which of the following is NOT considered a proper safety measure when working at height?
   a) Using guardrails
   b) Wearing a helmet
   c) Ignoring weather conditions
   d) Using a full-body harness

3. What PPE is essential for fall protection?
   a) Safety boots
   b) Full-body harness with lanyard
   c) Earplugs
   d) Safety goggles

4. When assessing the stability of an elevated platform, which factor is most important?
   a) Colour of the platform
   b) Weight capacity and condition of supports
   c) Height from ground only
   d) Number of workers on the platform
   Answer: b) Weight capacity and condition of supports

5. Which regulation typically governs working at height safety requirements?
   a) OSHA
   b) Food Safety Act
   c) Traffic Safety Code
   d) Noise Control Act
   Answer: a) OSHA

6. What health condition might make working at height unsafe?
   a) Perfect vision
   b) Vertigo or balance disorders
   c) Regular exercise habit
   d) Good cardiovascular health

7. What is the purpose of medical screening before working at height?
   a) To check physical fitness and identify conditions affecting safety
   b) To test skills on ladder use
   c) To check educational qualifications
   d) To monitor attendance
   identify conditions affecting safety

8. When ascending or descending a ladder, what is a key precaution?
   a) Carry tools in both hands
   b) Face the ladder and maintain three points of contact
   c) Jump from one rung to another
   d) Climb quickly to save time

9. How can workers below a height work area be protected?
   a) Warning signs and barricades
   b) Loud music
   c) Ignoring the area below
   d) No protection needed
   Answer: a) Warning signs and barricades

10. Which ground-level safety measure is important in height work?
    a) Clear debris and keep access paths free
    b) Ignore the ground conditions

c) Use only heavy equipment

d) Increase noise levels

11. What is a common cause of falls from height?

a) Wearing PPE

b) Slippery surfaces and lack of guardrails

c) Proper training

d) Using safety nets

12. How should hazards identified at height be reported?

a) Immediately to supervisor or safety officer

b) After the workday ends

c) Only if someone gets hurt

d) Not necessary to report

13. What is the first action in rescue measures after a fall?

a) Move the injured worker immediately

b) Call emergency services and secure the scene

c) Ignore and continue work

d) Remove safety equipment

14. When should work at height be avoided?

a) During good weather

b**) When equipment or conditions are unsafe**

c) When PPE is worn properly

d) When properly trained personnel are present

Answer: b) When equipment or conditions are unsafe

15. What is the purpose of guardrails?

a) To provide fall protection by preventing accidental falls

b) To decorate the worksite

c) To support heavy equipment

d) To mark work zones only

16. What is a lanyard used for?

a) To connect a worker's harness to an anchor point

b) To carry tools

c) To climb ladders faster

d) To secure materials on the ground

17. Which is NOT part of fall protection systems?

a) Safety nets

b) Guardrails

c) Ear plugs

d) Personal fall arrest systems

18. Which medical screening procedure is important for workers at height?

a) Vision test

b) Hearing test only

c) Blood sugar check only

d) None required

19. What should be done before starting work on an elevated platform?

a) Check platform stability and safety measures

b) Work immediately without checks

c) Remove PPE for comfort

d) Ignore supervisor instructions

20. Why is training important before working at height?

a) To ensure workers know hazards and how to use safety equipment

b) To delay work start

c) For paperwork only

d) Not important

Answer: a) To ensure workers know hazards and how to use safety equipment

Model Question Papers

SET -B

1. What is the main cause of accidents when working at height?
   a) Electrical faults
   b) Falling due to lack of precautions
   c) Fire hazards
   d) Noise exposure

2. Which of these is a correct safety precaution during ladder use?
   a) Carrying heavy tools in one hand while climbing
   b) Maintaining three points of contact on the ladder
   c) Climbing with your back to the ladder
   d) Using damaged ladders

3. What is an engineering control for fall prevention?
   a) Safety training
   b) Installing guardrails
   c) Using PPE
   d) Reporting hazards

4. Which PPE protects a worker from falls?
   a) Respirator mask
   b) Safety harness with shock-absorbing lanyard
   c) Steel-toed boots
   d) Earmuffs

5. Why is a rescue plan necessary when working at height?
   a) To assist workers who have fallen immediately
   b) To conduct safety meetings
   c) To store PPE
   d) To avoid work delays

6. What should be checked to ensure platform stability?
   a) Weather forecast only
   b) Support structure integrity and anchorage
   c) Colour of paint
   d) Worker's footwear
   anchorage

7. Which health issue can disqualify a worker from working at height?
   a) Good physical fitness
   b) Vertigo or epilepsy
   c) Normal vision
   d) No prior injuries

8. When is it safe to work at height?
   a) Only when fall protection measures are in place and PPE is used
   b) At any time
   c) Without supervision
   d) Only during nighttime

9. What should be done if a hazard is found during height work?
   a) Report it immediately
   b) Continue work ignoring the hazard
   c) Wait for someone else to notice
   d) Hide it from supervisors

10. What is a common cause of fall accidents?
    a) Using proper PPE
    b) Equipment failure and poor maintenance
    c) Following safety rules
    d) Adequate training

11. What type of medical screening is essential before height work?
    a) Physical fitness and balance assessment
    b) IQ test

c) Driving license check

d) None required

12. How often should PPE for fall protection be inspected?

a) Before each use

b) Once a year

c) Never

d) After an accident only

13. What should workers below a height work site do?

a) Stay clear and follow barricade instructions

b) Ignore warning signs

c) Stand under the work area

d) Distract workers above

14. What is an important administrative control in fall prevention?

a) Training and issuing work permits

b) Using PPE only

c) Ignoring safety policies

d) Avoiding supervision

15. Which device absorbs shock during a fall?

a) Helmet

b) Shock-absorbing lanyard

c) Gloves

d) Steel boots

16. What should be done if weather conditions worsen during height work?

a) Stop work immediately

b) Continue without precautions

c) Speed up the work

d) Ignore conditions

17. What is the correct way to report hazards?

a) Through the established safety reporting system

b) By word of mouth only

c) Never report minor hazards

d) Report only at the end of the day

18. Who is responsible for ensuring fall protection on site?

a) Only the workers

b) Both management and workers

c) Visitors

d) None

19. What is the main benefit of guardrails?

a) To prevent falls by providing a physical barrier

b) To hang tools

c) To mark the site boundary

d) To carry heavy loads

20. What is essential before starting any work at height?

a) Conducting a safety briefing and checking equipment

b) Starting immediately without checks

c) Ignoring the weather

d) Wearing casual clothes

Model Question Papers

SET -B SET -C

1. What does “three points of contact” mean in ladder safety?
   a) Using both hands and one foot or both feet and one hand on the ladder at all times
   b) Climbing two rungs at a time
   c) Carrying tools in one hand while climbing
   d) Standing on the top rung
2. Which fall protection system arrests a fall after it occurs?
   a) Guardrails
   b) Personal fall arrest system (harness and lanyard)
   c) Warning signs
   d) Safety net only
3. Why is it important to avoid work under unsafe conditions?
   a) To prevent accidents and injuries
   b) To reduce work speed
   c) To increase workload later
   d) To save time
   Answer: a) To prevent accidents and injuries
4. Which item is NOT a part of PPE for working at height?
   a) Full body harness
   b) Lanyard
   c) Safety helmet
   d) Ear plugs
   Answer: d) Ear plugs
5. How often should medical screenings be conducted for workers at height?
   a) Initially and periodically as needed
   b) Only once before joining
   c) Every 10 years
   d) Never
6. What is a common cause of negligence leading to falls?
   a) Lack of attention and improper equipment use
   b) Wearing PPE properly
   c) Supervision
   d) Training
7. What should be done if a fall hazard cannot be eliminated?
   a) Use fall protection systems and PPE
   b) Ignore the hazard
   c) Work faster
   d) Remove the hazard yourself without informing
8. **a) Monitor compliance with safety procedures**
   b) Perform work only
   c) Ignore hazards
   d) Allow unsafe work
9. Why is securing tools important during height work?
   a) To prevent tools from falling and causing injuries below
   b) To lose tools easily
   c) To slow down work
   d) To decorate the site
10. Which is a key precaution when using scaffolds?
    a) Ensuring proper assembly and inspection before use
    b) Using damaged scaffolds
    c) Ignoring weight limits
    d) Standing on guardrails
11. What action is critical after a worker falls but is conscious?
    a) Do not move the worker; call for medical help immediately
    b) Move the worker immediately
    c) Leave the worker unattended
    d) Continue work
12. How should workers protect themselves from falls when no guardrails are available?
    a) Use personal fall arrest systems
    b) Work without any protection
    c) Rely on spotters only
    d) Work quickly to reduce time at height

13. What is the correct response if a worker feels dizzy at height?
    a) Stop work immediately and seek assistance
    b) Continue working
    c) Ignore the symptoms
    d) Climb higher
14. Which of the following is part of emergency rescue measures?
    a) Rapid safe retrieval of the fallen worker
    b) Ignoring the incident
    c) Leaving the worker alone
    d) Waiting for other workers to continue
15. What is the primary reason for conducting a medical screening before allowing a worker to perform tasks at height?
    a) To check physical fitness and identify any incompatible health conditions
    b) To confirm the worker's age
    c) To test knowledge of fall safety procedures
    d) To assign job roles
16. Which of the following is an important safety measure when ascending or descending a ladder?
    a) Carrying heavy tools in one hand
    b) Maintaining three points of contact at all times
    c) Jumping between platforms to save time
    d) Ignoring weather conditions
17. What is one of the key fall protection systems commonly used to prevent serious injury?
    a) Safety harness connected to an anchor point
    b) Wearing comfortable shoes
    c) Using scaffolding without guardrails
    d) Working during nighttime to avoid crowds
18. Which action should be taken if a hazard or unsafe condition is observed at a work site involving heights?
    a) Ignore and continue working
    b) Report the hazard to the supervisor immediately
    c) Try to fix it without informing others
    d) Work faster to finish before anyone notices
19. What rescue measure is recommended if a worker falls but is suspended by a fall arrest system?
    a) Leave the worker to self-rescue
    b) Immediately initiate a rescue plan to safely retrieve the worker
    c) Cut the suspension rope
    d) Wait for the worker to climb up

References

Basics of Safety Requirements in Working at Height

S. No.	Title/Source	Author / Organization	Type	Relevance
1	Construction Safety Manual	National Safety Council, India	Book	Covers general safety including fall protection, scaffolding, ladders etc.
2	Safety in Construction	R.K. Jain & Sunil S. Rao	Book	Includes specific sections on working at height and related hazards.
3	IS 3764:1992 – Indian Standard for Use of Ladders	Bureau of Indian Standards (BIS)	National Standard	Details specifications and safe use of ladders in Indian workplaces.
4	IS 3521:1999 – Industrial Safety Belts and Harnesses	Bureau of Indian Standards (BIS)	National Standard	Technical standards for PPE used in height-related work.
5	Safety, Health and Environment for Construction Workers	K.N. Rao	Book	Discusses fall risks, accident causes, PPEs and health screening.
6	Occupational Safety and Health for Working at Heights (Online Course)	Directorate General Factory Advice Services (DGFASLI)	Govt. Portal/Course	Govt. e-learning module on fall safety and legal provisions in India.
7	www.dgfasli.gov.in	Ministry of Labour and Employment (India)	Official Website	Offers official documents, rules, safety manuals, and training guidelines.
8	www.nsc.org.in	National Safety Council of India	Official Website	Provides books, posters, and guidelines on fall protection and working safely.
9	The Building and Other Construction Workers (BOCW) Act, 1996	Government of India	Legal Act/Regulation	Lists safety responsibilities of employers and fall protection mandates.

S. No.	Title/Source	Author / Organization	Type	Relevance
10	Central Labour Institute Safety Journal	Central Labour Institute (CLI), Mumbai	Journal/Magazine	Publishes articles and research on workplace safety, including heigh