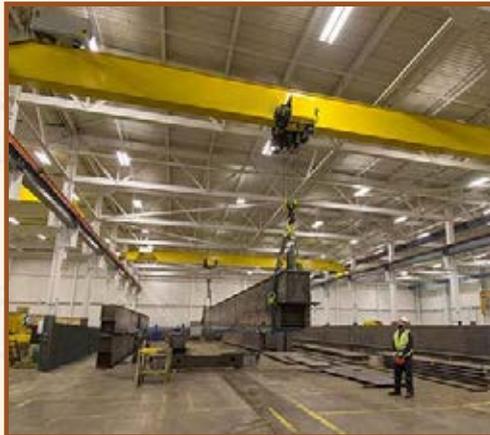




Facilitator Guide



Sector
Iron & Steel

Sub-Sector
**Steel, Sponge Iron, Ferro Alloys,
Re-Rollers, Refractory**

Occupation
Iron Making

Reference ID: **ISC/Q0901, Version 4.0**
NSQF Level: **3**

EOT Overhead Crane Operator



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Shri Narendra Modi
Prime Minister of India

“ Skilling is building a better India.
If we have to move India towards
development then Skill Development
should be our mission. ”

Acknowledgements

Indian Iron and Steel Sector Skill Council would like to thank Iron and Steel member company representatives for believing in our vision to enhance the employability of the aspiring workforce pool. IIS SSC facilitates this by developing and enabling the implementation of courses relevant to projected industry needs. The aim is to address two key requirements, of closing the industry-academia skill gap, and of creating a talent pool that can reasonably meet current competitiveness requirements and weather future externalities in the Iron and Steel Sector providing impetus to the Make in India program.

IIS SSC believes that this is an initiative of great importance for all stakeholders concerned – the industry, academia, and the aspirants. The tremendous amount of work and ceaseless support offered by the members of IIS SSC in developing a meaningful strategy for the content and design of program training materials has been truly commendable.

We would like to thank all concern stakeholders who have help us in bringing much needed focus to this effort.

About this Guide

This facilitator guide is designed to enable training for the specific Qualification Pack (QP). Each National Occupational (NOS) is covered across Unit/s.

This job involves operating overhead cranes for safe transfer of raw material, intermediaries and finished products within the plant on receiving the signal.

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This book is designed to enable a candidate to acquire skills that are required for employment.

The content of this book is completely aligned to the National Occupation Standards QP/NOS and conform to the National Skills Qualification Framework (NSQF).

The Qualification pack of EOT Overhead Crane Operator, Level 3 includes the following NOS's which have all been covered across the units:

1. ISC/N0008: Use basic health and safety practices at the workplace
2. ISC/N0009: Work effectively with others
3. ISC/N0913: Preparing crane for the operation
4. ISC/N0914: Operating crane to transfer material
5. DGT/VSQ/N0101: Employability Skills (30 Hours)

Key Learning Objectives for the specific NOS mark the beginning of the Unit/s for that NOS. The symbols used in this book are described below.

Symbols Used



Steps



Activity



Tips



Notes



Objectives



Do



Ask



Explain



Elaborate



Field Visit



Say



Facilitation Notes



Demonstrat



Resources

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6. Employability Skills (30 Hours)

The book on New Employability Skills is available at the following location:

<https://eskillindia.org/NewEmployability>

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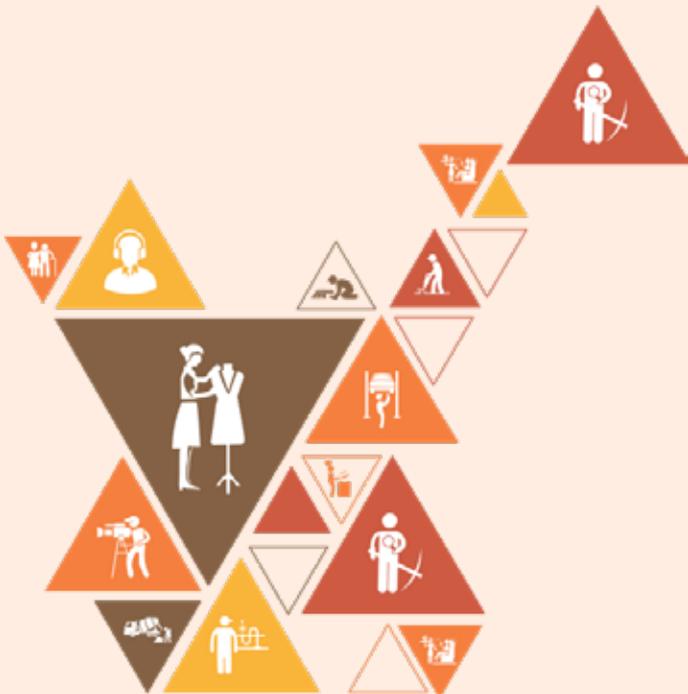


1. Introduction to the Job Role

Unit 1.1 – Introduction of Iron & Steel Industry

Unit 1.2 – Types of Iron and Steel Industry

Unit 1.3 – Role of EOT Overhead Crane Operator in Industry



Key Learning Outcomes

At the end of this module, trainees will be able to:

1. Explain Iron and Steel industry
2. List development activities in Iron and Steel industry
3. List employment opportunities in India
4. Explain Iron and Steel industry structure
5. List Iron and Steel plants in India
6. List the role and duties of an EOT Overhead Crane Operator
7. Explain personal and professional attributes required for occupation.

UNIT 1.1: Introduction of Iron and Steel Industry

Unit Objectives

At the end of this unit, trainees will be able to:

1. Explain about Iron and Steel industry
2. List development activities in Iron and Steel industry
3. List employment opportunities in India

Resources to be Used

- Facilitator can use the available objects such as a marker, duster, pen, notebook etc.

Do

- Take a parcel, mention some details such as student name, hobbies, likes, dislikes etc.
- Make the trainees stand in a circle, close enough to the person each side of them that they can pass the parcel quickly.
- Say 'Stop' when the trainees least expect it. The person who has the parcel at that time should get out from the class.
- Those who get out should introduce themselves by providing the details mentioned in the parcel.
- The winner of the game should stand and introduce himself/herself at the end of the game.
- At last, say thanks to the trainees for their participation.
- Ask for feedback on the exercise of participation and what they derived out of it.

Notes for Facilitation

- Ask the trainees about the expectations from the course.
- Invite trainees to participate. List the expectations on the whiteboard.
- You could ask the trainees who get out during the game to be the music keepers. They can start and stop the music as the game progresses.
- Encourage shy trainees to provide information about themselves by prompting them with questions such as 'what do you enjoy doing the most', 'what is your favorite movie or book' etc. Ask the trainees about the expectations from the course.
- Invite trainees to participate. List the expectations on the whiteboard.

Ask



- Ask them about their understanding for Iron & Steel industry.
- Ask about their expectations from the course and industry.

Say



- India is the world's third-largest producer of crude steel (up from eighth in 2003)
- India's crude steel capacity reached 109.85 Million tonnes (MT) in 2014-15, a growth of 7.4 per cent.
- Coal and iron-ore are required in large amounts in the production of iron and steel.
- According to the data released by Department of Industrial Policy and Promotion (DIPP), the Indian metallurgical industries attracted Foreign Direct Investments (FDI) to the tune of US\$ 8.7 billion, respectively, in the period April 2000–September 2015.

Elaborate



Elaborate following information about Iron and Steel Industry to trainees

- Production of Iron and Steel in India
- Conditions for the growth of Iron and Steel Industries in India
- Development activities in Iron & Steel Industry.
- Initiatives taken by Indian government for growth of Iron and Steel Industry.
- Foreign investments in Iron and Steel Industry.
- Employment opportunities in Iron and Steel Industry

Notes for Facilitation



- Start with a positive and happy note
- Summarize the main points.
- Encourage them to ask questions and involve during the session.
- Share your inputs and insight to encourage the trainees.
- Wrap the session up after summarizing the key points and answering questions.

UNIT 1.2: Types of Iron and Steel Industry

Unit Objectives

At the end of this unit, trainees will be able to:

1. Explain Iron and Steel industry structure
2. List Iron and Steel plants in India

Resources to be Used

- Facilitator can use the available objects such as a marker, duster, pen, notebook etc.

Do

- Greet and welcome the participants to the next session of the program.

Say

- The Iron and Steel Industry in India has 2 separate divisions:
 - o Integrated producers
 - o Secondary producers
- Tata Iron and Steel Company (TISCO) is the oldest iron and steel centre of India.
- There are more than 50 Iron and Steel industries in India.

Ask

- Ask about presence of Iron and Steel industries in India.
- Ask about name of Iron and Steel players of India.

Explain



- Explain different sub-sectors comes under Iron and Steel sector.
- Explain features of each sub-sector comes under Iron and Steel sector.
- Explain about major Iron and Steel plants of India.

Notes for Facilitation



- Summarize the main points.
- Ask participants if they have any doubts.
- Encourage them to ask questions.
- Answer their queries satisfactorily.

Scan the QR code or click on the link to watch related videos



https://youtu.be/74jl_khPUig
Iron and Steel Industry



<https://youtu.be/i2xcqWoe1Og>
Types of Iron and Steel Industry

UNIT 1.3: Role of EOT Overhead Crane Operator in Industry

Unit Objectives

At the end of this unit, trainees will be able to:

1. Explain the role of EOT Overhead Crane Operator in industry
2. List personal attributes and knowledge requirements

Resources to be Used

- Available objects such as whiteboard, marker pens, duster.
- PC with LCD Projector or Flip Chart
- Participant Manual

Do

- Greet and welcome the participants to the next session of the program.
- Before starting the session ask them do they have any doubts pertaining to the previous unit.
- Capture their responses on board and share them wherever necessary.

Say

- An EOT overhead crane operator operates overhead cranes for lifting and moving raw material, intermediaries and finished products within the plant.
- He/she has to be physically fit, not have colour blindness, have analytical skills, problem solving attitude, high concentration levels, a sharp reflex and willingness to work in a factory environment.

Ask

Ask these questions to trainees

- List role and responsibilities of an EOT overhead crane operator.
- What are the skills required to become an EOT overhead crane operator?

Elaborate



EOT overhead crane operator job duties

- Overhead crane operators ensure safe movement as well as safe loading and unloading of large or bulky equipment.
- They operate stationary or traveling overhead crane to move, lift and position loads.
- Overhead crane operators manipulate or depress overhead crane controls like levers, pedals etc.
- An overhead crane operator has to clean and maintain hoisting and crane mechanism.



Fig 1.3.1 EOT Crane Operator

Explain



- The roles and responsibilities of an EOT overhead crane operator
- The career path of an EOT overhead crane operator
- Explain about the qualification pack (QP) and NOS details of EOT overhead crane operator job role.

Notes for Facilitation



- Summarize the main points.
- You could ask the trainees what they know about the need for EOT crane operation work.
- Give trainees some tips for how to become a successful EOT crane operator.
- Give the trainees a brief overview of what all will be covered in the program.
- Tell participants to complete the questions at the end of the unit.
- Ensure that every participant answer all the questions.



2. Follow Basic Health and Safety Practices at the Workplace

Unit 2.1 – Occupational Health & Safety

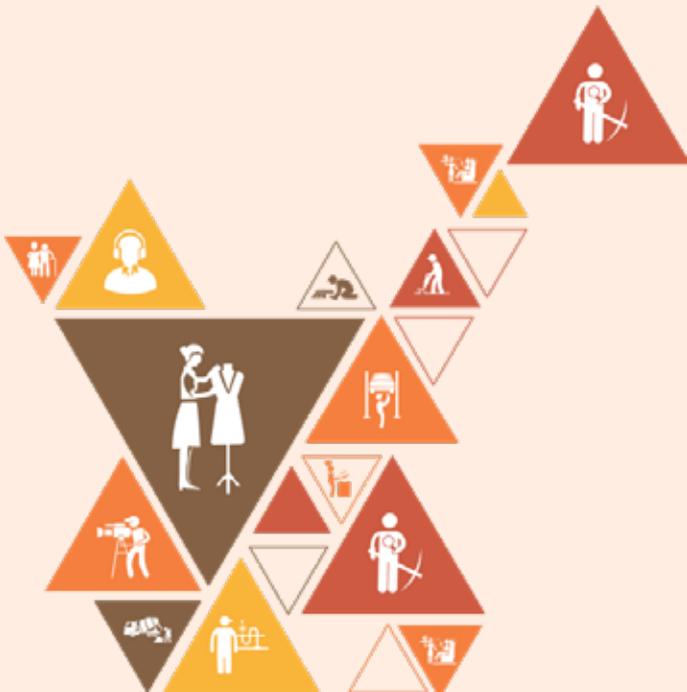
Unit 2.2 – Safe Working Practices

Unit 2.3 – Fire Safety and Emergency Procedures

Unit 2.4 – Housekeeping at Workplace

Unit 2.5 – Risk Management and Problem Escalation

Unit 2.6 – Reporting and Documentation



Key Learning Outcomes

At the end of this module, trainees will be able to:

1. Explain safety requirements and resources required in different areas for personal safety.
2. Demonstrate safe work practices while working at workshop.
3. Explain hazards, types of hazards and how to control hazards
4. Identify PPE required during work.
5. Demonstrate safe working practices at heights.
6. Demonstrate safe working practices at confined spaces.
7. Demonstrate actions need to perform during fire hazards.
8. Demonstrate use of fire extinguisher during fire hazards.
9. Perform first aid during an accident
10. Explain problem identification process
11. Explain risk management process
12. Explain escalation matrix and problem escalation process
13. Explain reporting and documentation requirements
14. Explain accident reporting procedure
15. Perform reporting of accidents and defective tools

UNIT 2.1: Occupational, Health and Safety (OHAS)

Unit Objectives

At the end of this unit, trainees will be able to:

1. Discuss about health and safety requirements in industry
2. List essential elements of safety
3. Explain hazards and different types of hazards
4. Explain how to identify and control hazards

Resources to be Used

- Available objects such as a duster, pen, notebook, warning signs etc.

Do

- Welcome and greet the participants. Revise the learnings of the previous sessions and ask them if they have any doubts.

Say

- The health and safety of employees is crucial since it affects both economic and social factors.
- The nature of various types of accidents is shown by an iceberg of incidents. They are unsafe actions, incidents, minor injuries, lost time injuries, serious accidents and fatalities.
- You have to regularly attend review meetings, trainings, emergency safety drills and safety audits to ensure safety at workplace.

Ask

Ask these questions to trainees

- What are the three important aspects of safety in Iron and Steel industry?
- List essential elements necessary for safety.
- What are the good safety practices?
- What they think about safety in Iron and Steel industry?

Elaborate



- The condition of the work place environment e.g. means of access, physical plant safety, housekeeping, and safe place of work etc.
- The training and competence of the employees which include ability to understand apply and respond to safe systems of work.
- The development of motivational and behavioral influences of employees. This includes the use of more direct strategies to identify unsafe behavior and attitudes and to motivate employees.

Say



- A hazard is something that has the potential to cause injury, disease or death in a workplace.
- Aspects for the development of a safe workplace environment are development policies, consultative process, hazard identification and control.
- Always follow safety signages to ensure safety at workplace and ensure the control measures.

Ask



- What are the different types of hazard?
- You can pick the students and ask the hazard warning sign.
- What are the most common hazard in workshop?

Elaborate



Discuss and elaborate these points with trainees:

- Important aspects to the development of a safe workplace environment.
 - o The development of policies
 - o The development of consultative processes
 - o Hazard identification, assessment and control.
- Types of hazard
 - o Physical hazard
 - o Mechanical hazard
 - o Chemical hazard
 - o Electrical hazard
- Common hazards occur in Iron & Steel plant
 - o Road hazards

- o Coke oven and sinter plant
- o Blast furnace and steel melting shop
- o Rolling mills
- o Power plant
- o Material handling
- o Other common hazards which occur in steel plant
- Common causes of hazard

Do

- Show all the hazard warning sign and their differences.
- Ask the various techniques to avoid and control from hazards.
- Give trainees some time to think about effects of hazard on our body.

Activity

- Ask the trainees to assemble together.
- Show the hazard signage chart to trainees and tell them to identify hazard signages one by one.
- By this activity, they will learn about different hazard signages paced at workplace.

Skill Practice	Time	Resources
Identify hazards signage	20 min	Hazard signage chart

Do

- Call each student one by one and ask him/her to identify the name of hazard sign showing on the chart.
- Wrap the unit up after summarizing the key points and answering questions.

Scan the QR code or click on the link to watch related videos



<https://youtu.be/R9s6YBhyTKM>
Occupational Health and Safety



<https://youtu.be/rnTCcZf2qtw>
Health, Safety and Hazards



<https://youtu.be/hlpGUtxz6b0>
Hazards

UNIT 2.2: Safe Working Practices

Unit Objectives

At the end of this unit, trainees will be able to:

1. Demonstrate safe working practices at workshop
2. Demonstrate use of different types of PPE
3. Demonstrate safe working practices at heights and confined spaces
4. Demonstrate safe material handling practices

Resources to be Used

- Available objects such as a duster, pen, notebook, PPE, heavy weight etc.

Do

- Welcome and greet the participants. Revise the learnings of the previous sessions and ask them if they have any doubts.

Say

- There are safe practices need to be consider for avoiding general workshop hazards.
- Use of personal protective equipment is the first step towards the safety. Personal protective equipment serves as the last resort for controlling hazards and is one, but not the only, ancillary or temporary measure.
- Every worker has to lift and move heavy weight during the job whenever required.
- Extreme care should be taken while lifting or moving the job so that no damage occurs to the job or plant and also to prevent accidents at work place.

Ask

- What are the safe practices for avoiding general shop hazards?
- What type of PPE is required for a mechanical drafter job?
- What are the benefits of PPE at workplace?

Elaborate

Discuss and elaborate the following points with trainees:

- Safe practices to avoid workshop hazards
- Safe practices to avoid machine hazards
- Personal protective equipment and their use
- Safe material handling and lifting



Fig 2.2.1: PPE

Do

- Show them the PPE.
- Demonstrate the use and requirement of PPE.
- Demonstrate the safe material handling practices.

Demonstrate

Take the trainees into workshop and demonstrate the safe lifting of heavy material manually

Activity

- Ask the trainees to assemble together.
- Tell the trainees to make pairs
- Tell them they have to demonstrate manual lifting of heavy material.
- By this activity, they will learn about how to lift a heavy load safely.

Skill Practice	Time	Resources
Safe weight lifting procedure	1 hours	PPE
		Heavy weight

Do

- Provide a heavy material to each pair.
- Make sure they are lifting the weight properly in correct body posture.
- Wrap the unit up after summarizing the key points and answering questions.

Notes for Facilitation

- You could ask the students about the understanding of safe working practices at heights and confined spaces.
- Invite students to participate. List the responses from students on the whiteboard.
- Give the students a brief overview of what all will be covered in the program.

Say

- Falls from height are responsible for many serious and fatal injuries every year.
- The Health and Safety Executive recommends a five-step approach to risk assessment, and the risk of slips, trips and falls should also be considered.

Elaborate

Elaborate and discuss following topics with the trainees:

- Safety equipment can used while working on heights
 - o Mobile elevated platforms
 - o Ladders
 - o Step-ladders
 - o Scaffolder
 - o Harnessing belts
- Do's and don'ts while working on heights
- Risk assessment procedure

Do

- Show the risk assessment procedure
 1. Look for hazards associated with falls from height around the workplace.
 2. Decide who might be harmed and how.
 3. Consider the risks.
 4. Record your findings if you have five or more employees.
 5. Regularly review the assessment.
- Demonstrate the safe use of ladders

Demonstrate

Demonstrate the steps of using a ladder safely as given in participant manual.

Say

- The confined space can be any space of an enclosed nature where there is a risk of death or serious injury from hazardous substances or dangerous conditions. Confined space such as Storage tanks, Silos, Reaction vessels, enclosed drains and Sewers.
- If you cannot avoid entry into a confined space, make sure you have a safe system for working inside the space.

Ask



- What is confined space?
- How the danger can arise in confined space?
- What can occur if there is lack of oxygen?

Elaborate



Elaborate and discuss following topics with the trainees:

- Confined space
- Dangers in confined space
- Essential elements need to consider while working in confined space

Do



- Show them the safety equipments required while working at confined spaces.
- Show lockout and tagout procedure of the machine.

Notes for Facilitation



- Summarize the main points.
- Ask participants if they have any doubts.
- Encourage them to ask questions.
- Answer their queries satisfactorily.

Scan the QR code or click on the link to watch related videos



<https://youtu.be/su7Yv57k2x0>

Safe working at heights and confined spaces

UNIT 2.3: Fire Safety and Emergency Procedures

Unit Objectives

At the end of this unit, trainees will be able to:

1. Demonstrate fire safety practices
2. Demonstrate use of fire extinguishers
3. Discuss about emergency procedures
4. Demonstrate first-aid practices

Resources to be Used

- Available objects such as a duster, pen, notebook, fire extinguisher, fire alarm, PPE etc.

Do

- Welcome and greet the participants. Revise the learnings of the previous sessions and ask them if they have any doubts.

Say

- Fire is defined as a self-sustaining combustion process in which a substance (fuel) combines with oxygen in air to produce immense heat and light.
- Fire hazards pose threats to life and property.
- There are four classes of fire i.e. Class A, Class B, Class C and Class D.
- A fire extinguisher is an active fire protection device used to extinguish or control small fires, often in emergency situations.

Ask

- What is fire?
- What are the common types of fire safety equipment used in industry?
- What is fire extinguisher and how you can use it?

Elaborate



Elaborate and discuss following topics with the trainees

- Fire and classes of fire
- Ways and effects of fire hazard
- Fire-fighting equipment
- Fire extinguisher
- Types of fire extinguisher and their classification according to classes of fire
- Use of fire extinguisher
- Tips during fire outbreak

Do



- Tell them about the fire fighting equipments.
- Show them the equipments and explain their use.
- Demonstrate them the use of fire extinguisher.
- Explain them about different types of fire extinguishers.

Demonstrate



- Take the trainees into the workshop.
- Demonstrate the steps of using fire extinguisher.

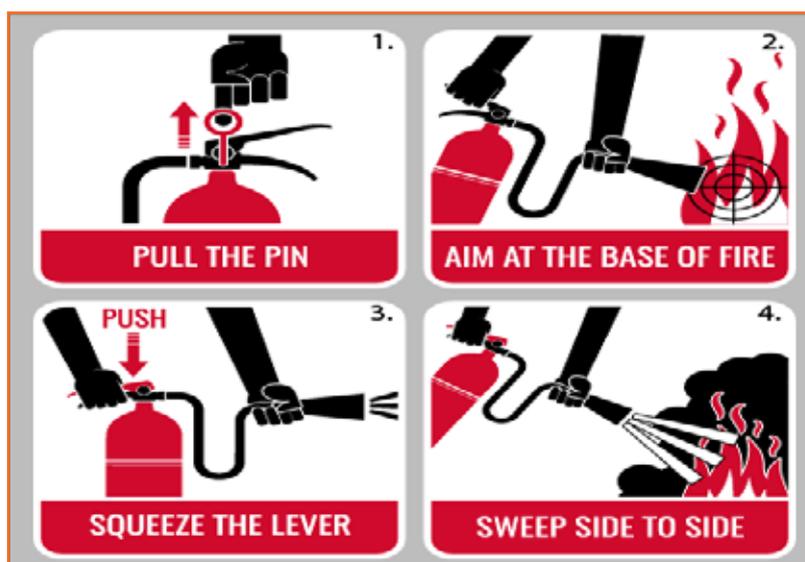


Fig 2.3.1 Steps of using fire extinguisher

Activity 1



- Ask the trainees to assemble together.
- Tell them to demonstrate the use of fire extinguisher one by one.
- By this activity, they will learn about use of fire extinguisher

Skill Practice	Time	Resources
Use of fire extinguisher	2 hours	Fire extinguisher
		PPE

Do



- Support them in using a fire extinguisher properly.
- Go around and make sure they are doing it properly.

Activity 2



- Ask the trainees to assemble together.
- Give them a situation of fire drill and tell them to prepare a fire drill report individually.
- By this activity, they will learn about writing a fire drill report.

Skill Practice	Time	Resources
Fire drill report	2 hours	Report format
		Fire drill details

Do



- Go around and make sure they are writing the report properly.
- Support them in writing the report.

Say



- If you think someone is suffering from electric shock, approach with extreme caution and its your duty to give the basic first aid to save the life of victim.

Ask



Ask these questions to trainees

- What are the basic steps of first aid?
- What is CPR process?

Demonstrate



You can make a group of few trainees to demonstrate the steps of first-aid in following situations:

- Free a person from electrocution
- Bleeding and Wounds
- Burns
 - o Chemical or Compressed Gas Burns
 - o Heat or Electrical Burns
- Choking
- Basic techniques of banding
- Artificial respiration and the CPR Process
- Correct method to move injured people during an emergency

Do



- Show the do's and dont's in case of an electric shock to trainees .

Do's	Don't
Take rest	Do not give the victim anything to eat or drink
Lay the victim on his/her back	Do not move the victim
Keep the victim warm by using the blanket or clothes.	Do not keep the victim in warm and hot conditions.
If the victim is not in pain, raise the feet and legs of victim with the support of a pillow.	If victim in pain, do not move.

Activity



- Ask the trainees to assemble together.
- Tell them to divide into six groups.
- Tell them to prepare a role play of an accident and demonstrate the first aid steps need to perform for saving the victim.

Skill Practice	Time	Resources
First aid practices	3 hours	Mannequin, first-aid box

Do



- Support the teams in preparation of role play
- Praise their effort during the demonstration.
- Wrap the unit up after summarizing the key points and answering questions.

Field Visit



Plan a visit to any of the industry and show the firefighting equipment. With the help of field visit show the trainees where we need to various firefighting equipment and how to use them.

Show them fire drill session. With the help of field visit explain them the importance of fire drill for safety/

Tell them, they have to prepare a fire drill report based on the drill session they have seen.

Scan the QR code or click on the link to watch related videos



<https://youtu.be/skYZJU8IGSU>
Fire prevention



<https://youtu.be/FY2TwtC2ppk>
First-aid practices

UNIT 2.4: Housekeeping at Workplace

Unit Objectives

At the end of this unit, trainees will be able to:

1. State the methods to keep the work area clean and tidy.
2. Apply basic housekeeping practices to ensure that the work area is clean.
3. Explain 5S Safety system
4. Explain need of 5S safety system
5. Discuss various methods of waste management and its disposal.
6. Demonstrate different disposal techniques depending upon different types of waste.

Resources to be Used

- Facilitator can use the available objects such as a marker, duster, pen, notebook, participant manual etc.
- PC with LCD Projector or Flip Chart

Do

- Welcome and greet the participants. Revise the learnings of the previous sessions and ask them if they have any doubts.

Say

- Housekeeping includes keeping work areas tidy and arranged; keep floors free of slip and trip accidents; clearing of waste materials and other fire hazards.
- Good housekeeping is a basic step for preventing accident and fire hazards. Poor housekeeping and hiding hazards can cause frequent accidents which can cause injuries.
- Good housekeeping is a vital factor in preventing accidents. The great majority of all work accidents are caused during the handling of goods or materials, and by people falling, being hit by falling objects, or striking against objects in the workplace. All these causes can be reduced by good housekeeping practices.
- Examples of housekeeping are: excessive material, waste or chips in the working area, congested aisles, tools left on machines, waste containers overflowing, lockers and workrooms in disorder, acids in open containers, broken glass etc.

Explain



- Explain principle of housekeeping.
- Explain benefits of housekeeping.
- Explain the checklist of housekeeping program.

Elaborate



Elements of effective housekeeping are:

- Hearing Protection
- Eye Hazards
- Chemical Exposure
- Mechanical Hazards
- Fire Hazards
- Carbon monoxide poisoning
- Dust and fumes

Ask



Ask these questions to trainee:

- What are the housekeeping concerns in a manufacturing industry?
- How carbon monoxide poisoning effects a person?
- What are the areas and objects need to take care under effective housekeeping program in an industry?

Say



- 5S is a basic, systematic approach for productivity, quality and safety improvement.
- 5S is created by a list of five Japanese words: seiri, seiton, seiso, seiketsu, and shitsuke.

Elaborate



5S describes how to organize a work space for efficiency and effectiveness by identifying and storing the items used, maintaining the area and items, and sustaining the new order.

Objectives of 5S:

- The manufacturing process to be standardize
- Tools can be search in very less time.
- By 5S the quality of products and Service is improve
- Production can be increase by the use of 5S.
- Focus on safety and health

Three purposes of conducting regular 5S Audit reviews are:

- Review compliance to the 5S standards for your factory
- Note and address non-compliance – to fix what is wrong!
- Provide a formal opportunity to suggest improvements

Explain



- Explain phases of 5S system.
- Explain advantages of 5S system.
- Explain purpose of 5S audit.

Ask



Ask these questions to trainees:

- What are the objectives and advantages of 5S?
- What are the standards that were set during 5S for make a checklist?
- What are the key tasks done during 5S audit?

Activity

- Ask the trainees to assemble together.
- Divide the class in to 5 equal groups.
- Tell them to do the 5S audit of your training center and prepare a report on it.
- By this activity, they will learn about how to conduct 5S audit of workplace.

Skill Practice	Time	Resources
5S Audit	1 hours	Sample 5S audit checklist

Do

- Go around and make sure they are doing it properly.
- Support them in conducting the 5S audit and preparing the report.
- Share your inputs and insight to encourage the trainees and add onto what they are doing.

Say

- Waste management is the collection, transport, processing, recycling or disposal of waste materials.
- Waste may be classified as garbage, rubbish, industrial wastes, mining wastes etc.
- Industrial waste can be of following types: liquid waste, solid waste, organic waste, recyclable rubbish and hazardous waste.

Ask

Ask these questions to trainees:

- What are the elements of waste management strategy?
- What are the different methods of waste management?

Explain

- Explain different types of industrial waste.
- Explain different methods of waste management segregation, composting, landfill and recycling.

Notes for Facilitation



- Summarize the main points.
- Ask participants if they have any doubts.
- Share your inputs and insight to encourage the trainees and add onto what they are doing.
- Wrap the session up after summarizing the key points and answering questions.

Field Visit



Arrange a visit to any of the nearest Iron and Steel industry and show the housekeeping practices, 5S Safety system and check the various points of safety with the help of 5S audit checklist

Scan the QR code or click on the link to watch related videos



<https://youtu.be/FUqD7BTfEJY>
Ways of housekeeping



<https://youtu.be/D7Zgn5keNtE>
Ways of housekeeping

UNIT 2.5: Risk Management and Problem Escalation

Unit Objectives

At the end of this unit, trainees will be able to:

1. Explain risk management process
2. Explain escalation matrix
3. Demonstrate how to escalate issues properly

Resources to be used

- Available objects such as a duster, pen, notebook etc.

Do

- Welcome and greet the participants. Revise the learnings of the previous sessions and ask them if they have any doubts.

Say

- Risk Management consists of methodical steps for handling hazards in the workplace.
- One major component of risk management is workplace safety inspections. Inspections are a major tool in ensuring that a workplace remains safe.

Ask

Ask these questions to trainees

- How to control the problems?
- What is risk management process?

Elaborate



After inspection, make an inspection report, which includes the following information:

1. Fill in the name of the area inspected if not already indicated on the sheet, the date and inspectors' names in the area provided.
2. Check either yes or no according to the situation or item listed, or put a check next to each listed control.
3. Record suggested remedial action in the comments for the identified action items.
4. State what needs to be or should be done to correct and better control the hazardous situation.

Demonstrate



Demonstrate the process of risk assessment

1. Identifying any foreseeable problem
2. Assessing the problem
3. Control the problem or if this is not possible, controlling the risk from the problem - \
4. Reviewing risk assessment

Activity



- Ask the students to assemble together.
- Divide the class into five equal groups
- Tell them to make a checklist of inspection according to norms and standards and conduct the inspection of workplace

Skill Practice	Time	Resources
Inspection	1 hour	Checklist

Do



- Ask them to get into pairs for practice.
- Go around and make sure they are doing it properly.
- Wrap the unit up after summarizing the key points and answering questions.

Say



- For escalating issues to the concerned department, every organization follows a specific procedure. This procedure is based on escalation matrix.

Ask



Ask these questions to trainees

- What is escalation matrix and its features?
- What they understand about the process of problem management?
- How escalation matrix works for complaints?

Explain



- Explain the process of problem management
- Explain the key features of escalation matrix
- Explain How does escalation matrix work for Complaints

Elaborate



- Escalation matrix is a complaint logging system (complaint box) allows you to specify multiple user contacts to be notified in the event of issues. By using escalation matrix you can notify the right people at the right time about critical alerts irrespective of the business hours.
- The key features of escalation matrix are as follows:
 - o The escalation levels are based on schedules.
 - o The service is available 24X7 and schedules are allocated accordingly.
 - o The schedules are time zone specific.
 - o A matrix can be defined at multiple levels ranging from senior management to lower management.

Demonstrate



Demonstrate the process of problem escalation

1. Complaint of a given category will by default be assigned and notified by email to the Level 1 department of that category.
2. It defines which an issue has to be raised to whom and within which time frame.
3. If the complaint is not resolved within X number of days (X is the time defined for Level 1 department to resolve the issue), the complaint will be escalated to Level 2 department.
4. If the complaint is not resolved within Y number of days (Y is the time defined for Level 2 department to resolve the issue), the complaint will be escalated to Level 3 department.

Notes for Facilitation



- Summarize the main points.
- Ask participants if they have any doubts.
- Answer their queries satisfactorily.

Scan the QR code or click on the link to watch related videos



<https://youtu.be/jgIkdxGJblw>
Problem identification and escalation



<https://youtu.be/76nv-kKsNbA>
Problem identification and escalation

UNIT 2.6: Reporting and Documentation

Unit Objectives

At the end of this unit, trainees will be able to:

1. Explain accident and incident reporting
2. Explain how to write reports properly
3. Perform reporting of faulty and damage tools

Resources to be used

- Available objects such as a duster, pen, notebook, sample accident report format etc.

Do

- Welcome and greet the participants. Revise the learnings of the previous sessions and ask them if they have any doubts.

Say

- It is extremely important to report accidents and incidents right away, no matter how minor it may be.
- Reporting of incidents and accidents is required under the Work Health and Safety (WHS) legislation
- Always report an accident to management immediately. There should be a form at each workplace that you (or the person involved) and any witnesses can fill out, where possible, otherwise it can be completed by a health and safety representative (HSR) if necessary.

Elaborate

Hazard reports can take a number of different forms:

- the standard hazard report used by workers for all hazards
- reports of infections

- near-miss incident reports
- reports of damage and faulty tools, equipment and machines
- routine inspection reports

Structure of an accident report:

- Description of the occurrence
- Nature of injury or disease
- Injury or disease happened as a result of the occurrence?
- First aid, medical treatment or hospital admission
- Part of the body affected
- Source of injury
- Probable cause or causes of injury
- Investigation
- Notification checklist
- Preventative action
- Witness details

Ask

Ask these questions to trainees

- What are the areas covered in accident report?
- Why reporting and documentation is necessary?
- What are the important things to remember filling reports and documents?

Say

- Like accident or incident reporting, reporting of faulty and damaged machine, tools and equipments is also necessary.
- Any damaged, faulty or malfunctioning tools, equipment should be immediately withdrawn from use and addressed according to organizational policies and procedures

Elaborate



Check the following details before doing reporting or providing any repair suggestions:

- Last date of inspection
- Last date of repair and which part was repaired.
- Life cycle of the tool, equipment or machine

In machine or equipment faulty or damage report you have to provide following details:

- Name of the tool or machine
- Registration details of machine
- Who does the inspection of toll and machine before the use
- Trouble or hazard from the defective tool or machine
- Defective part name or number
- Remedial action - Tool or machine has to be discontinued or need repair
- Which process is going to affect due to the faulty machine or tool
- Report whether the machine or tool is performing accurately or precisely.
- Report that there limits, fits and tolerances are set or not according to industrial standards.

Activity



- Ask the students to assemble together.
- Make pairs of students
- Tell them to imagine a fire accident and prepare a fire accident report

Skill Practice	Time	Resources
Fire accident report	1 hour	Checklist

Do



- Provide them a fire hazard situation for making report.
- Go around and make sure they are doing it properly.
- Share your inputs and insight to encourage the trainees and add onto what they are doing.
- Wrap the unit up after summarizing the key points and answering questions.

Scan the QR code or click on the link to watch related videos



<https://youtu.be/Rh1s-f7a6qg>
Reporting and Documentation

Exercise



1. a
2. a
3. a
4. c
5. b
6. d
7. Ears
8. a
9. d
10. d
11. b
12. b
13. Accident report

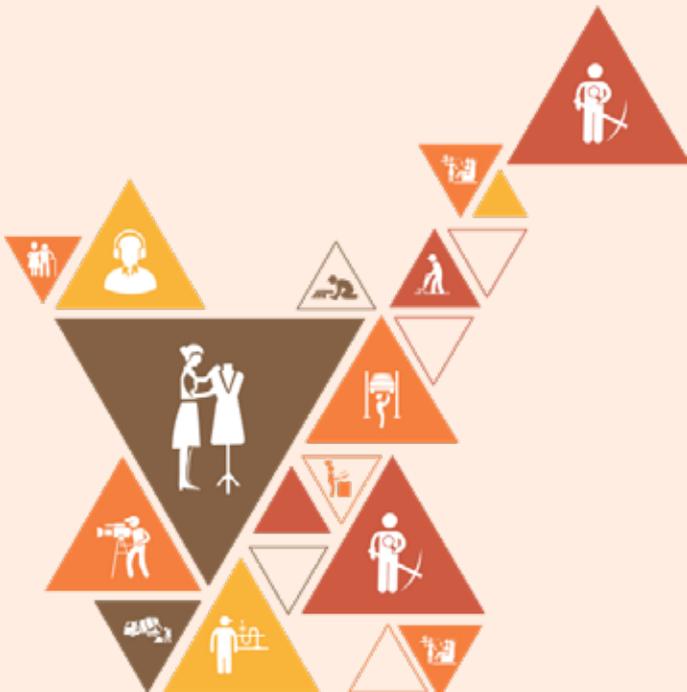


3. Effective Communication and Interpersonal Skills at Workplace

Unit 3.1 – Working with Others

Unit 3.2 – Workplace Etiquette

Unit 3.3 – People with Disability (PwD) and Gender Sensitization



Key Learning Outcomes

At the end of this module, trainees will be able to:

1. Discuss how to do effective communication with colleagues
2. Explain workplace etiquette
3. List characteristics of team
4. List advantages of teamwork
5. Demonstrate ways to communicate with People with Disability (PWD)
6. Demonstrate ways to communicate with different gender people.

UNIT 3.1: Working with Others

Unit Objectives

At the end of this unit, trainees will be able to:

1. Discuss how to communicate effectively with colleagues
2. Explain effective communication
3. List characteristics of team

Resources to be used

- Available objects such as a duster, pen, notebook etc.

Do

- Welcome and greet the participants. Revise the learnings of the previous sessions and ask them if they have any doubts.

Ask

- What is the need and importance of teamwork?
- List advantages of team work.

Say

- The current trend of working in an organization is to work in form of teams. While working in an organization they have to support and guide other team members also.
- A good team is the one that motivates its members to have a positive attitude, perform better.
- Team work is a very important part of working life. They can have a big impact on the profitability of an organization, team and individual performance, company reputation, etc.
- The three important determinants of teamwork are leadership, the building of the right kind of groups or teams for better productivity.

Elaborate



Lessons from the Geese:

Teams are much more effective than individuals for work. Let's look at an example from Mother Nature to learn how an effective team works.

The geese actually fly in a group on their long flight of migration.

The flapping of the geese that are in front of the formation creates a draft for the geese at the rear reducing air resistance. This indicates their true sense of responsibility towards the fellow beings.

When the leader of the formation of the geese is tired, it goes back and another goose then comes in the front to lead the group of Geese. So, these Geese have no fixed leadership or hierarchy.

No goose likes to fly out of formation because it would get tired easily. Even if it does fly out of formation, it quickly comes back to its place. So, Geese have amazing team sense!

Geese also make a lot of noise while they fly. But it's interesting to note that the noise is not made by the geese leading the formation, but by the Geese in the back of the formation, which serve to support and keep everyone going. Isn't that the unique vocal support?

If one goose is ill and falls out of formation, a few of others stay with it, to be with it until it gets well or dies. Now, that's what we call team spirit!

Geese are unique as a team. The team behaves as a cohesive whole with a common goal of reaching a particular destination in mind. Team members help each other since they can collectively achieve much more than they can alone.

As explained about the Geese, being a human if we are sharing common set of direction and have consider our community can move fast and reach to our goal in shorter period because we move with trust on each other.

Considering the Geese if we follow their footsteps we will be connected with the persons who could lead us to reach our destination. We willing accept help from others and offer our help to others.

It pays to take turns in doing the hard tasks and share the leadership. As with Geese, people are interdependent on each other's skills, capabilities and unique arrangements of gifts, talents and resources.

We need to make sure we are encouraging each other in the team. In teams where there is encouragement, the production is much higher.

If we have as much sense as Geese, we will stand by each other in difficult times as well as when we are strong. Now, what do you say to that!!!

Explain



- Explain teamwork checklist need to follow at workplace
- Advantages of teamwork

Activity



- Divide students into teams and give them equal amounts of newspaper, gum, cello tapes – no scissors or blade should be used. Ask them to construct a castle in 30 mins. Best team will be identified based upon the following criteria:
 - Which team can build the tallest, structurally-sound castle?
 - Which team can build a castle the fastest?
- Divide students into teams and in each team, 1 person should be the player. The player should not speak throughout the game, The eyes of the player will be tied and the rest of the team should direct him towards the exit of the room. The player should not touch any object till he/she reaches the exit door. Also, the team members should make sure they give him the proper clue for the directions. There is one more requirement. The player should first be directed to a place where the marker pen is placed. The player needs to pick it and then go towards the exit door. The team should co-ordinate amongst them and helps the player throughout the game. Time limit is 15 mins for each team.
 - o Questions to ask during the review:
 - o Did you come up with a strategy before starting the challenge?
 - o Did you adapt your game plan?
 - o How did you feel being blindfolded? Did you always trust your communicators?
 - o Did you get frustrated at any point?

Say



- Each colleague plays an important role in the success of the organization
- People like hearing their own names, don't assume a person is more or less important, Self-assess and Respect other people's personal space are some ways of communicate with others properly.
- Communication is a tool which connects us with other human beings. An effective communication not only helps in developing a sense of belonging but also facilitates better working, improves relationships, reduces stress.
- Communication is the process of exchange of words, ideas, feelings. It is the meaningful exchange of information between two or more participants.

Ask



- What are the ways of effective communication with colleagues?

Explain

- Elements of effective communication
- Ways of effective communication

Team Activity

- Ask the trainees to assemble together.
- Tell the trainees to make pairs and plan a communication on any topic.
- Each pair has to communicate together for 5 minutes.in front of class.

Skill Practice	Time	Resources
Effective communication between 2 persons	1 hour	Communication tools

Do

- Go around and make sure they are doing it properly.
- Praise them for their efforts.
- Wrap the unit up after summarizing the key points and answering questions.

Scan the QR code or click on the link to watch related videos



https://youtu.be/se3r-b_iwV8
 ,, Communication with others



<https://youtu.be/CQmnf5zSt5o>
 Workplace etiquette

UNIT 3.2: Workplace Etiquette

Unit Objectives

At the end of this unit, trainees will be able to:

1. Explain organization policies and procedures
2. Explain workplace etiquette

Resources to be used

- Available objects such as a duster, pen, notebook etc.

Do

- Welcome and greet the participants. Revise the learnings of the previous sessions and ask them if they have any doubts.

Ask

- What is the role of colleagues in the success of the organization?
- How to make a good impression on the job?
- Why one's uniform should be neat, clean and ironed?

Say

- Office etiquette is important because bad manners at work can be bad for business by negatively affecting employee morale and productivity.
- Etiquette is basically polite behavior and courtesy, a person is expected to follow.
- The way you present yourself to others in the business world speaks volumes about you. Many people form first impressions about others within seconds of meeting them
- Make a positive impression, cooperate with colleagues and work space savvy are some important tips to help you succeed on the job.
- A well-groomed personality projects a good image and speaks well of hygiene and efficiency.

Elaborate

Discuss and elaborate these points with trainees

- Organization policies and procedures while working with colleagues:
- Work etiquettes
- Grooming of personnel

Do

Show certain etiquette that should be kept in mind at workplace:

- o Stand straight, make eye contact and turn towards people when they are speaking.
- o Follow the dress code prescribed by the organization.
- o Limit personal calls especially when you are working in a manufacturing unit.
- o Eat and smoke to the designated areas
- o Discipline
- o Commitment to work
- o Punctuality

Activity

- Ask the students to narrate instances when they have been scolded by their school teachers/ elders for behaving inappropriately-like dragging one' feet while walking, etc.
- Look for other such instances.

Notes for Facilitation

- Summarize the main points.
- Ask participants if they have any doubts.
- Encourage them to ask questions.
- Answer their queries satisfactorily.

UNIT 3.3: People with Disability (PwD) and Gender Sensitization

Unit Objectives

At the end of this unit, trainees will be able to:

1. Demonstrate ways to communicate with People with Disability (PwD)
2. Demonstrate ways to communicate with different gender people

Resources to be Use

- Available objects such as white board, marker pens, duster.
- PC with LCD Projector or Flip Chart

Do

- Welcome and greet the participants. Revise the learnings of the previous sessions and ask them if they have any doubts.

Say

- Each colleague plays an important role in the success of the organization.
- We communicate with people many times every day, either face to face, on the phone or in writing. When communicating with someone with disability, it is important to treat them like others but keeping some points in mind, so that they cannot hurt due to their disability.
- Similarly when communicating with different gender person, we need to consider some points at workplace, so that it can shows any discrimination due to different gender.

Ask

- What are the ways of effective communication with PwD and different gender people?

Elaborate



Elaborate and discuss below points with trainees

- Way to communicate with PwD
- Barriers in communication with different gender
- Differences between male and female communication style in workplace
- Ways to communicate with different gender people
- Six principles of gender responsive communication

Explain



- Differences between male and female communication style in workplace
- Six principles of gender responsive communication
- Common mistakes during communication with different gender

Do



- Show them how to communicate properly with PwD
- Show them how to communicate properly with different gender

Team Activity



- Ask the students to assemble together.
- Tell the trainees to make 6 groups and plan a role play on communication on any topic.
- By this activity, they learn how to communicate effectively with PwD and different gender people.

Skill Practice	Time	Resources
Effective communication topic with different gender and PwD	3 hours	Communication tools

Do

- Each group has to present the role in front of class.
- Support them in preparing role play.
- Praise them for their efforts.

Exercise

Answers of the exercise

1. as discussed 2. as discussed 3. as discussed 4. as discussed
5. d 6. d 7. b 8. d 9. d 10. d



4. Prepare an EOT Crane for the Operation

Unit 4.1 – EOT Crane and Its Components

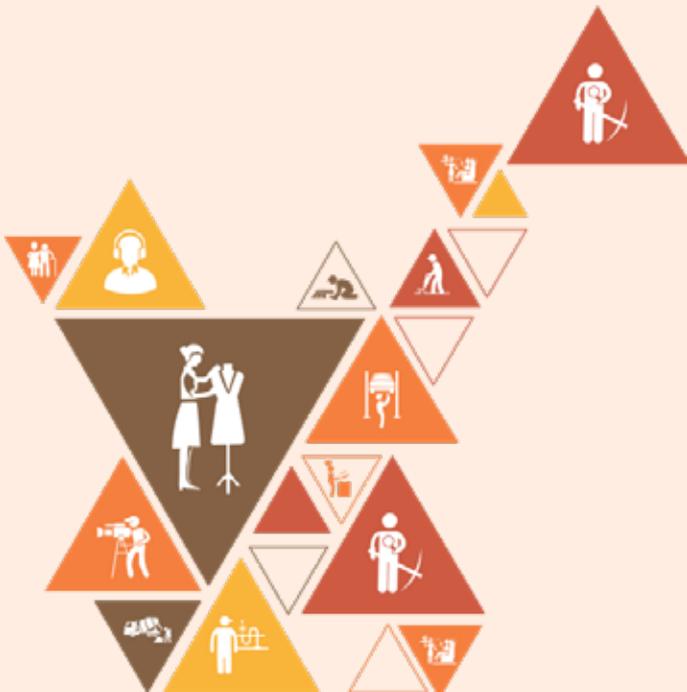
Unit 4.2 – Hoists and Slings

Unit 4.3 – Hoisting Accessories

Unit 4.4 – Pre-Inspection of Hoisting Equipment

Unit 4.5 – Knots and Hitches

Unit 4.6 – Load Calculation



Key Learning Outcomes

At the end of this module, trainees will be able to:

1. Explain about EOT cranes
2. List different types and categories of EOT crane
3. Explain working principle of EOT crane
4. List basic components of EOT crane
5. Identify basic parameters need to consider during selection of EOT crane
6. Explain about hoists and their lifting media
7. List different types of hoists
8. Explain about slings
9. Identify different type of slings
10. List different accessories required during lifting
11. Perform pre-inspection of various hoisting equipment
12. List various types of knots.
13. Explain about hitches
14. Explain Center of Gravity.
15. Demonstrate how to calculate load and volume requirements of crane

UNIT 4.1: EOT Crane and Its Components

Unit Objectives

At the end of this unit, trainees will be able to:

1. Explain about EOT cranes and their working principle
2. List basic components of EOT crane
3. Identify basic parameters need to consider during selection of EOT crane

Resources to be Used

- Available objects such as whiteboard, marker pens, duster, EOT crane.
- PC with LCD Projector or Flip Chart
- Participant Manual

Do

- Welcome and greet the participants. Revise the learnings of the previous sessions and ask them if they have any doubts.

Say

- An EOT crane stands for Electric Overhead Travelling crane and used for handling & moving heavy components within a specified area.
- It is extensively used in the warehouse, workshop and stock ground of mining, unloading or relocating heavy load.

Ask

Ask these questions to trainees:

- What is the working principle of EOT cranes?
- What are the different categories and types of EOT crane?

Elaborate



Elaborate and discuss below points with trainees

- Categories of Overhead cranes
 - o Top running single girder bridge cranes,
 - o Top running double girder bridge cranes and
 - o Under-running single girder bridge cranes.
- Parameters consider while selecting an EOT crane
- **Types of EOT Cranes**
 1. Single girder cranes
 2. Double Girder Bridge Cranes
 3. Gantry Cranes
 4. Monorail
- EOT Crane working principle
 1. Transmission of hoisting system
 2. Transmission of crane trolley traveling system
 3. Transmission of crane traveling system

Say



An EOT crane has various components. We need to select the crane and its components on the basis of load. Now, we discuss about various components of EOT crane, their functioning and specifications.

Ask



Ask these questions to trainees:

- List different components of EOT crane.
- What are the various parameters need to consider for an EOT crane selection?

Elaborate



Various components of EOT crane

1. Bridge
2. End trucks
3. Bridge Girder(s)
4. Platforms
5. Runway
6. Runway Rail
7. Hoist
8. Travel mechanism
9. Trolley
10. Bumper (Buffer)
11. Cabin
12. Electrical Equipment

Parameters needed for specifying an overhead crane

1. Crane Capacity
2. Lift Height
3. Runway Height
4. Clearance
5. Clear Span
6. Building Height
7. Runway Length
8. Hook approaches
9. Bridge, Trolley and Lift Speeds
10. Electrical Requirements
11. Control Requirements

Notes for Facilitation



- Summarize the main points.
- Ask participants if they have any doubts.
- Encourage them to ask questions.
- Answer their queries satisfactorily.

Scan the QR code or click on the link to watch related videos



https://www.youtube.com/watch?v=BF0C3QZn_-8

EOT Crane

UNIT 4.2: Hoists and Slings

Unit Objectives

At the end of this unit, trainees will be able to:

1. Explain about hoists and their lifting media
2. Explain about slings
3. List different types of hoists and slings

Resources to be Used

- Available objects such as whiteboard, marker pens, duster, different types of hoists and slings
- PC with LCD Projector or Flip Chart
- Participant Manual

Do

- Welcome and greet the participants. Revise the learnings of the previous sessions and ask them if they have any doubts.

Say

- A hoist is used for lifting or lowering a load with the help of a lift-wheel around which a rope or chain wraps.
- Hoists generally carry a hook at fixed end which connects to a crane or trolley for moving or lifting the load.

Elaborate

Discuss and elaborate the below points with trainees:

- **Types of hoists**
 1. Manual hoists
 2. Powered hoists

- **Hoists selection factors**
 - o The weight of the load
 - o Physical size of the load.
 - o Clearance Considerations
 - o Lifting Speed Considerations
 - o Hoist duty Cycle Considerations
- Characteristics of chain hoists
- Characteristics of wire rope hoists

Ask



Ask these questions to trainees

- List different types of hoists.
- What are the characteristics of manual and powered hoists?
- What is the importance of hoist in an EOT crane operation?
- What is the difference between chain hoist and wire rope hoist?

Do



- Show different types of hoists to trainees.
- Explain the specification and use of each hoist to them.

Say



- Wire rope consists of individual wires laid into a number of strands, which are then wrapped around a central core.
- Wire rope slings have great strength combined with flexibility.
- The core of wire rope may be constructed of fiber rope, independent wire rope, or a wire strand.
- Chain slings are made up of chain rings. The advantage of chain slings is that they deteriorate and corrode less.

Elaborate

Elaborate and discuss following topics as given in trainee handbook

- Components of wire rope i.e. core, wire and strand
- Factors of wire rope sling
 - o Rope lay
 - o Sling eye design
 - o D/d Ratios Apply to Slings
 - o Choker Hitch Rated Capacity Adjustment
- General operating practices of slings

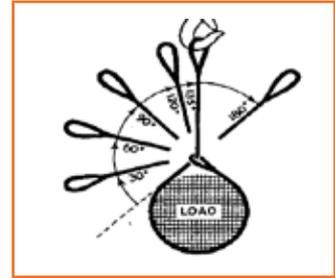


Fig 3.2.1 D/d Ratio of Slings

Ask

Ask these questions to trainees:

- You could ask the wire rope slings and its components.
- What are the factors need to consider during selection of wire rope slings?
- What are the important points should be looked during pre-use inspection of slings?
- What are the general operating practices of slings?

Do

- Show different types of slings to trainees.
- Explain the specification and use of each sling to them.

Demonstrate

Take the trainees into workshop and demonstrate the procedure of identifying defects in various types of slings as given in trainee handbook.

- Defects in wire rope sling
- Defects in synthetic web slings
- Defects in chain sling

UNIT 4.3: Hoisting Accessories

Unit Objectives

At the end of this unit, trainees will be able to:

1. List different accessories required during lifting
2. Explain their use and specification

Resources to be Used

- Available objects such as whiteboard, marker pens, duster and hoisting accessories and components.
- PC with LCD Projector
- Participant Manual

Do

- Greet and welcome the participants to the next session of the program.
- Before starting the session ask them do they have any doubts pertaining to the previous unit.
- Capture their responses on board and share them wherever necessary.

Say

During lifting of load by an EOT crane, we need to use various types of hoisting accessories for safe lifting and moving of load. In this session, we will discuss about various hoisting accessories and how to use them properly.

4.3.1: Shackles

Resources to be Used

- Available objects such as whiteboard, marker pens, duster and different types of shackles.

Say

- A shackle is a curved piece of metal secured with a pin or bolt across the opening.
- There are two basic shapes for shackles and they are either anchor pattern or chain pattern.

Ask

Ask these questions to trainees:

- What are the different types of shackles available?
- What they know about the technique to use shackles?

Elaborate

Elaborate and discuss following points:

- Different types of Shackles
- Technique to use shackles
- Safety considerations need to follow during use of shackles

Do

- Show the shackles to the trainees.
- Demonstrate the use of shackles.
- Wrap the session after summarizing the main points.

4.3.2: Eye Bolts

Resources to be Used

- Available objects such as whiteboard, marker pens, duster and different types of eye bolts.

Say

- A screw which has threads on one end and loop on the opposite end is known as eye bolts.
- Eye bolts are mainly used for attaching the cables with the objects for lifting.

Ask

Ask these questions to trainees:

- What are the different types of eye bolts available?
- List safety measures for using an eye bolt.

Elaborate

Elaborate and discuss following points:

- Types of eye bolts:
- Eye bolt applications
- Selection of correct eye bolt
- Safety measures using eye bolt
- Eye bolt installation procedure

Do

- Show the eye bolts to the trainees.
- Take the trainees into workshop and demonstrate the eye bolts installation procedure for lifting and object.
- Wrap the session after summarizing the main points.

4.3.3: Hooks

Resources to be Used

- Available objects such as whiteboard, marker pens, duster and different types of hooks.

Say

- Most hooks are constructed from forged alloy steel and are stamped with their rated safe working loads (SWLs).

Ask

Ask these questions to trainees:

- How many types of hooks are used?
- How to inspect the hooks before use?

Elaborate

Elaborate and discuss following points:

- Types of hooks
- Pre-use inspection of hooks

Do

- Show the hooks to the trainees.
- Demonstrate the use of hooks.
- Give safety tips for using hooks.
- Wrap the session after summarizing the main points.

4.3.4: Wire Rope Clips

Resources to be Used

- Available objects such as whiteboard, marker pens, duster and different types of wire rope clips.

Say

- They are used in the field to make an eye on wire rope.
- Clips (clamps) shall be legibly and permanently marked with size and the manufacturer's identifying mark.

Ask

Ask these questions to trainees:

- How many types of wire clips are used?
- How to inspect the wire clips before use?

Elaborate

Elaborate and discuss following points:

- Types of wire clips
- Pre-use inspection of wire clips
- Installation procedure of clips

Do

- Show the wire rope clips to the trainees.
- Demonstrate the method of installing wire rope clips.
- Demonstrate the use of wire rope clips.
- Wrap the session after summarizing the main points.

4.3.5: Turnbuckles

Resources to be Used

- Available objects such as whiteboard, marker pens, duster and different types of turnbuckles.

Say

- The turnbuckles are used otherwise should be avoided, a qualified engineer must be approved, analyzed and designed that system.
- The turnbuckles should be made-up from forged alloy steel. If vibration is present, then a turnbuckle is used in an application to prevent them from loosening and turning.

Ask

Ask these questions to trainees:

- What is the use of a turnbuckle during load lifting?
- How to inspect the turnbuckles before use?

Elaborate

Elaborate and discuss following points:

- Pre-use inspection of turnbuckles
- Installation procedure of turnbuckles

Do

- Show the turnbuckles to the trainees.
- Demonstrate the method of installing turnbuckles.
- Demonstrate the pre-use inspection procedure of turnbuckles.
- Wrap the session after summarizing the main points.

4.3.6: Lifting Beams, Spreaders and Frames

Resources to be Used

- Available objects such as whiteboard, marker pens, duster and spreader beams.

Say

- Spreader beams are used to support long loads during lifts.
- They eliminate the hazard of the load tipping, sliding or bending and the tendency of the sling to crush the load.

Ask

Ask these questions to trainees:

- What is the use of a spreader beam during load lifting?
- How to inspect the spreader beam before use?

Elaborate

Elaborate and discuss following points:

- Pre-use inspection of spreader beam

Do

- Show the spreader beam to the trainees.
- Demonstrate the pre-use inspection procedure of spreader beam.
- Show the use of spreader beam during load lifting.
- Wrap the session after summarizing the main points.

4.3.7: Sheave and Cargo Blocks

Resources to be Used

- Available objects such as whiteboard, marker pens, duster and sheave and cargo blocks.

Say

- Sheaves are used to change travel direction of the wire ropes.
- A block is a frame that encloses one or more sheaves and is provided with a hook or some other means that allows attachment to cargo or to a fixed anchor point.

Ask

Ask these questions to trainees

- What is the use of a sheave and cargo block during load lifting?
- How to inspect the sheave and cargo block before use?

Elaborate

Elaborate and discuss following points as given in trainee handbook

- Types of sheaves and cargo blocks
- Pre-use inspection of sheave and cargo block
- Use of sheave and cargo block

Do

- Show the sheave and cargo block to the trainees.
- Demonstrate the pre-use inspection procedure of sheave and cargo block.
- Show the use of sheave and cargo block during load lifting.

Activity

- Ask the trainees to assemble together.
- Ask them to get into pairs for practice.
- Tell them to demonstrate the proper installation and use of hoisting accessories.

Skill Practice	Time	Resources
Installation and use of hoisting accessories.	5 hours	Wire rope clips, eye bolts, hooks, shackles, turnbuckles cargo bocks, sheaves

Do

- Provide hoisting accessories and tools required during installation to trainees.
- Tell them to install hoistign accessories in crane, inspect them for proper functioning and then show theri use for lifting a load.
- Guide them dusing the activity
- Go around and make sure they are doing it properly.

Notes for Facilitation

- Summarize the main points.
- Ask participants if they have any doubts.
- Encourage them to ask questions.
- Answer their queries satisfactorily.

UNIT 4.4: Pre Inspection of Hoisting Equipment

Unit Objectives

At the end of this unit, trainees will be able to:

1. Discuss about pre inspection requirements.
2. Demonstrate pre-inspection procedure of various hoisting equipment

Resources to be Used

- Available objects such as whiteboard, marker pens, duster, hoisting equipment, inspection tools.
- PC with LCD Projector
- Participant Manual

Do

- Greet and welcome the participants to the next session of the program.
- Before starting the session ask them do they have any doubts pertaining to the previous unit.

Say

- It is necessary to pre-inspect the various hoisting equipment and accessories like wire rope slings, synthetic web sling, hook, shackle and eye bolt.
- Follow the manufacturer instructions when installing and inspecting the hoisting equipment.

Ask

- Ask about the pre-inspection checklist of various hoisting equipment like wire rope slings, synthetic web sling, hook, shackle and eye bolt.

Elaborate

Elaborate and discuss the following hoisting equipment pre-inspection as given in trainee handbook

- Wire rope slings pre-inspection
- Synthetic web slings-pre use inspection
- Hooks-Pre use inspection
- Shackles-Pre use inspection
- Eye bolt pre-use inspection
- Hoist rings pre-use inspection

Demonstrate

Take the trainees into workshop and demonstrate the pre-use inspection procedure of hoisting equipment and accessories as given in trainee handbook.

Activity

- Ask the trainees to assemble together.
- Ask them to get into pairs for practice.
- Tell them to inspect the available hoisting equipment and accessories as discussed.
- By this activity, they learn how to inspect the hoisting equipment and accessories before starting the crane operation.

Skill Practice	Time	Resources
Pre inspection of hoisting equipment and accessories	2 hours	Sling, shackle, eyebolt, hook, hoist ring

Do

- Provide hoisting equipment and accessories, tools and equipment required during inspection procedure to trainees.
- Tell them to inspect the hoisting equipment and accessories, identify the defects and then take the action as demonstrated in workshop.

UNIT 4.5: Knots and Hitches

Unit Objectives

At the end of this unit, trainees will be able to:

1. List various types of knots.
2. Explain about hitches
3. List various types of hitches

Resources to be Used

- Available objects such as whiteboard, marker pens, duster, ropes.
- PC with LCD Projector or Flip Chart
- Participant Manual

Do

- Greet and welcome the participants to the next session of the program.
- Before starting the session ask them do they have any doubts pertaining to the previous unit.

Say

- For lifting light material and lowering tools, the knots are more efficient and practical than other lifting methods.
- To support the load a hitch is the manner of using the sling. A hitch is any of several knots utilized to form a temporary noose in a rope or to protect a rope around a timber, post or pipe so that it will grip provisionally but can be eagerly uncompleted.

Ask

Ask these questions to trainees:

- What are the different types of knots used?
- What are the different types of hitches?

Elaborate



- Different types of knots used are:
 - o Bowline
 - o Bowline on the Bight
 - o Square Knot
 - o Two Half Hitches
 - o Running Bowline
 - o Figure-Eight Knot
 - o Butterfly Knot
- Different types of hitches are:
 - o Suspended Load
 - o Single Vertical Hitch
 - o Choker Hitch
 - o Single Choker Hitch
 - o Double Choker Hitch
 - o Basket Hitch

Explain



- Explain the characteristics of each type of knot.
- Explain the characteristics of each type of hitch.

Demonstrate



Take the trainees into workshop and demonstrate the steps of making different types of knots and hitches as given in trainee handbook.

Activity



- Ask the trainees to assemble together.
- Tell each trainee has to perform task individually.
- Tell them they have to form all types of knots and hitches.
- By this activity, they learn about how to make different types of knots and hotches.

Skill Practice	Time	Resources
Forming different types of knots and hitches	2 hours	Rope

Do



- Provide some pieces of ropes to each trainee.
- Tell them to form all types of knots and hotches as demonstrated in workshop.
- Go around and make sure they are doing it properly.
- Share your inputs and insight to encourage the trainees and add onto what they are doing.

Notes for Facilitation



- Summarize the main points.
- Ask participants if they have any doubts.
- Answer their queries satisfactorily.

Scan the QR code or click on the link to watch related videos



www.youtube.com/watch?v=4Jr7oqY7vRI

Knots

UNIT 4.6: Load Calculation

Unit Objectives

At the end of this unit, trainees will be able to:

1. Explain Center of Gravity.
2. Perform load and volume calculations

Resources to be Used

- Available objects such as whiteboard, marker pens, duster etc.
- PC with LCD Projector or Flip Chart
- Participant Manual

Do

- Welcome and greet the participants. Revise the learnings of the previous sessions and ask them if they have any doubts.

Say

- Gravity effects such evolutions as:
 - a) Lifting
 - b) Lowering
 - c) Stabilizing
- Force acts parallel to those surfaces toward a direction contradicting the relative movement between them.
- Every object resting on earth is said to be “at rest” and in a state of Static Equilibrium. All objects seek a state of equilibrium.

Ask

Ask these questions to trainees:

- How to evaluate the load?
- Ask about the symmetrical and asymmetrical loads for centre of gravity .

Elaborate

Discuss and elaborate following topics

- Weight calculation of load of different shapes
- Load calculation of symmetrical and asymmetrical loads
- Center of gravity (CG)
 - o Load is stable
 - o Load is unstable

Explain

Explain the steps to establish the weight of any load as given in trainee handbook.

1. Determine volume
2. Determine the material of the object
3. Determine weight of object

Do

Take examples given in trainee handbook and show how to calculate the weight of following

- Symmetrical loads
- Asymmetric loads
- Other shapes

Notes for Facilitation

- Summarize the main points.
- Ask participants if they have any doubts.
- Encourage them to ask questions.
- Answer their queries satisfactorily.



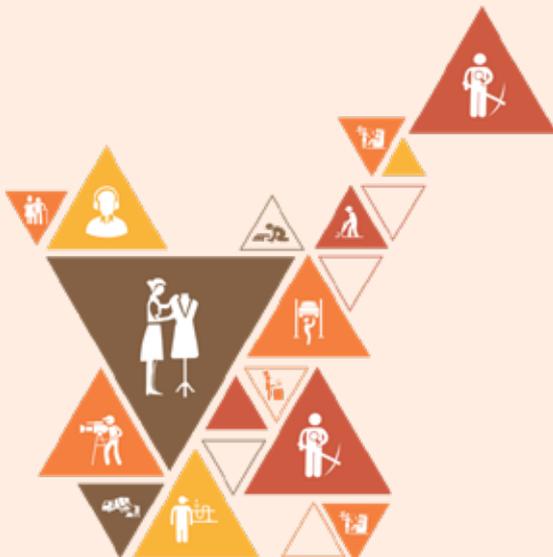
5. Operate an EOT Crane to Transfer Material

Unit 5.1 – Prepare EOT Crane for Operation

Unit 5.2 – Operating EOT Crane

Unit 5.3 – Maintenance of EOT Crane

Unit 5.4 – Troubleshooting and Repairing of EOT Crane



Key Learning Outcomes

At the end of this module, trainees will be able to:

1. Explain inspection need to done before operation
2. Explain preparation need to done before operation
3. Explain common accidents occur during EOT crane operation
4. Identify safety considerations during EOT crane operation
5. Describe hand signals for crane operation
6. Carryout trial operation of crane
7. Perform starting and stopping of crane
8. Perform handling of asymmetrical loads
9. Perform handling of symmetrical loads
10. Perform maintenance of EOT crane
11. Perform lubrication of EOT crane
12. Perform maintenance of EOT crane components
13. Perform troubleshooting and repairing of EOT carne components

UNIT 5.1: Prepare EOT Crane for Operation

Unit Objectives

At the end of this unit, trainees will be able to:

1. Explain inspection need to done before operation
2. Explain preparation need to done and safety considerations for EOT operation

Do

- Welcome and greet the participants. Revise the learnings of the previous sessions and ask them if they have any doubts.

Resources to be Used

- Available objects such as whiteboard, marker pens, duster, EOT crane and inspection tools.
- PC with LCD Projector or Flip Chart
- Participant manual

Say

- Before starting the operation, operator has to done the pre-inspection of crane. Operator has to check the proper working of brakes, levers control system etc.
- For proper operation, operator has to do the necessary routine checks.

Ask

Ask these questions to trainees:

- What are the routine checks need to be done before operating the crane?
- What is the need of routine inspection of crane?

Demonstrate



Take the trainees into workshop and demonstrate inspection activities need to done before operating an EOT crane components as given in trainee handbook.

Field visit



Plan a visit to industry and show how to inspect the crane before operation.

Activity



- Ask the trainees to assemble together.
- Divide the class into five equal groups.
- Tell them to pre-check crane before operation.
- By this activity, they learn how to inspect the crane before starting the operation.

Skill Practice	Time	Resources
Pre-inspection of EOT crane	3 hours	EOT Crane Inspection tools and equipment

Do



- Provide tools and equipment required during inspection of crane to trainees.
- Tell them to inspect the parts of crane and identify the defects as demonstrated in workshop.
- Guide the groups during the inspection of crane.
- Go around and make sure they are doing it properly.
- Share your inputs and insight to encourage the trainees and add onto what they are doing.

Say



- During lifting and moving load by EOT crane, many hazardous situations can occur due to negligence of safety.
- Now, we will discuss the common accidents and safety considerations to overcome those accidents.

Ask



Ask these questions to trainees:

- What are the common hazards occur during load lifting and moving an EOT crane?
- What safety precautions need to consider during crane operation?

Elaborate



Discuss and elaborate these points as given in trainee handbook:

- Common hazards occur during lifting and moving of load by EOT crane are:
 - o Overloading
 - o Caught between crane structure
 - o Hit by moving load
 - o Caught between load and lifting gear etc.
- Safety precautions for avoiding hazards during operation

Activity



- Ask the trainees to assemble together.
- Divide the class into five equal groups.
- Tell them to identify the hazardous situations inside the training center.
- By this activity, they learn how to identify the hazards in the workplace.

Skill Practice	Time	Resources
Identification of hazards in training center	2 hours	Notepad

Do



- Divide the training center area into five parts and allocate the parts to each group.
- Tell them, they have to inspect their part of training center and identify the hazards which can cause accidents in the training center.
- They also have to provide safety considerations or steps need to follow to avoid those accidents.
- Guide the groups during the inspection of training center.
- Go around and make sure they are doing it properly.
- Share your inputs and insight to encourage the trainees and add onto what they are doing.

Notes for Facilitation



- Summarize the main points.
- Ask participants if they have any doubts.
- Answer their queries satisfactorily.

Exercise



1. Lifting greater than 75% of the rated capacity, Lift involving more than one crane, Lift over occupied structures or in tight quarters Blind, lift (out of the view of the operator)
2. True 3. True 4. True 5. False
6. False 7. d 8. d 9. True

Notes



UNIT 5.2: Operating EOT Crane

Unit Objectives

At the end of this unit, trainees will be able to:

1. Identify hand signals for crane operation
2. Demonstrate starting and stopping of crane
3. Demonstrate handling of asymmetrical and symmetrical loads

Do

- Welcome and greet the participants. Revise the learnings of the previous sessions and ask them if they have any doubts.

Resources to be Used

- Available objects such as whiteboard, marker pens, duster, EOT crane, load, hoisting accessories.
- PC with LCD Projector or Flip Chart
- Participant manual

Say

- There is a specific procedure of operating an EOT crane, we will learn about it.

Ask

Ask these questions to trainees:

- What are the necessary safety precautions need to follow during crane operation?
- How can they safely handle symmetrical and asymmetrical loads?
- What are the various hand signals need to follow during crane operation?

Do

- Show the various hand signals need to follow during crane operation
- Explain the meaning of each hand signal to trainees.

Elaborate

The following are basic safety considerations need some attention during crane operation:

1. Do not load beyond the rated capacity
2. Conduct a periodic visual inspection for signs of damage or wear.
3. Always “inch” the hoist into the load.
4. Limit switches are for emergency use only
5. Be sure that the hoist raises or lowers properly.
6. Centre the hoist over the load before lifting.
7. Use padding on the edge of load if it is sharp and angular to prevent damage to the rope.
8. Wire ropes for load handling should not be placed on the portion of the load which may cause them to move or slip off.
9. Do not drag the load.
10. Know the hand signals.
11. Do not jog controls unnecessarily.
12. When the crane is be used after a long period of disuse, be sure to operate all the motions without load first.

Demonstrate

Take the trainees into workshop and demonstrate the procedure of given operations of an EOT crane as given in trainee handbook.

- Starting the crane
- Stopping the crane
- Moving asymmetrical loads
- Moving symmetrical loads

Activity

- Ask the trainees to assemble together.
- Tell the trainees to practice operation of an EOT crane
- Tell them, they have to do the practice one by one.
- By tis activity, they learn how to operate the crane, lift and move the load properly.

Skill Practice	Time	Resources
Crane operation	5 hours	EOT Crane, load and hoisting equipment

Do

- Call each student and tell them to operate the crane one by one as demonstrated in workshop.
- Tell them to first attach the hoisting equipment, after that start and stop the crane, lift and move the given load as demonstrated.
- Guide them during crane operation, so that they can do the practice safely.
- Go around and make sure they are doing it properly.

Field visit

Plan a visit to nearby industry and show starting, stopping, lifting and moving load by EOT crane for their better understanding.

Notes for Facilitation

- Summarize the main points.
- Allow the trainees to do practice in workshop.
- Ask participants if they have any doubts.
- Answer their queries satisfactorily.

Exercise

1. False
2. True
3. True
4. d
5. True

Scan the QR code or click on the link to watch related videos



www.youtube.com/watch?v=bhidOrgaKP8

Hand signals



www.youtube.com/watch?v=tDhYoqWJ-uE

Operating EOT Crane

UNIT 5.3: Maintenance of EOT Crane

Unit Objectives

At the end of this unit, trainees will be able to:

1. Perform maintenance of EOT crane
2. Perform lubrication of EOT crane

Do

- Welcome and greet the participants. Revise the learnings of the previous sessions and ask them if they have any doubts.

Resources to be used

- Available objects such as whiteboard, marker pens, duster, EOT crane, inspection tools.
- PC with LCD Projector or Flip Chart
- Participant manual

Say

- Service life and operational safety of the crane depend to a large extent on proper maintenance and lubrication. All driving parts should be regularly examined for faultless operation.
- Crane should be inspect for worn and broken parts, lubrication, loose fasteners and electrical parts during maintenance activities.

Ask

Ask these questions to trainees:

- What they know about maintenance schedule of EOT cranes?
- What they know about inspection and repairing of defects in EOT cranes?

Elaborate



Preventive maintenance of an EOT crane includes:

- Fluid Replacement
- Frequently Worked Parts
- Pads
- Hoses
- Warning Devices and Signs

Explain



- Explain lubrication schedule of EOT Crane.
- Explain maintenance and inspection chart of EOT Crane.

Demonstrate



Take the trainees into workshop and demonstrate maintenance activities for EOT crane components as given in trainee handbook.

- Maintenance of wire ropes
- Discard of wire ropes
- Maintenance of pulleys & sheaves
- Maintenance of gear box
- Maintenance of couplings
- Maintenance of motor
- Motor dismantling
- Motor assembly
- Maintenance of breaks
- Maintenance of electrical equipment
 - a. Control gear
 - b. Control panels
 - c. Resistor banks

Activity

- Ask the trainees to assemble together.
- Divide the class into five equal groups
- Tell them to perform maintenance and lubrication of crane.
- By this activity, they learn how to conduct the maintenance and lubrication of an EOT crane.

Skill Practice	Time	Resources
Maintenance and lubrication of EOT crane	5 hours	EOT Crane, lubricant Inspection tools and equipment

Do

- Provide tools and equipment required during maintenance and lubrication of crane and its components to trainees.
- Tell them to inspect the parts of crane, identify the defects and then do the repairing as demonstrated in workshop.
- Guide the groups during the maintenance and lubrication of crane and its components .
- Go around and make sure they are doing it properly.
- Share your inputs and insight to encourage the trainees and add onto what they are doing.

Field visit

Plan a visit to nearby industry and show maintenance program of EOT crane.

Notes for Facilitation

- Summarize the main points.
- Allow the trainees to do practice in workshop.
- Ask participants if they have any doubts.
- Answer their queries satisfactorily.

UNIT 5.4: Troubleshooting of Defects in EOT Crane

Unit Objectives

At the end of this unit, trainees will be able to:

1. Perform troubleshooting of EOT crane components
2. Perform repairing of EOT crane components

Do

- Welcome and greet the participants. Revise the learnings of the previous sessions and ask them if they have any doubts.

Resources to be used

- Available objects such as whiteboard, marker pens, duster, EOT crane, inspection and repairing tools.
- PC with LCD Projector or Flip Chart
- Participant manual

Say

- Regular inspection and repairing of defects is especially important for cranes.
- The daily safety inspection must be conducted by the crane operator each day and/or prior to use at the beginning of each shift.

Ask

Ask these questions to trainees:

- What are the common defects occurred in EOT crane?
- What they know about troubleshooting and repairing of various components of EOT crane?

Elaborate



Discuss and elaborate these points with trainees:

1. Daily inspection checklist of machines
2. Troubleshooting of defects, their causes and remedies for EOT crane components
 - I. Hook
 - II. Drums
 - III. Brakes
 - IV. Gear Box
 - V. Couplings
 - VI. Bearings
 - VII. Wheels
 - VIII. Drive Motor
 - IX. Control Panel
 - X. Main Switch
 - XI. Electrical hoists

Demonstrate



Take the trainees into workshop and demonstrate daily equipment safety check procedures as given in trainee handbook to them.

- Preliminary equipment checkout
- Daily equipment safety checkout (powered systems)
- Daily equipment safety checkout (hooks)
- Daily equipment safety checkout (bottom block assembly)
- Daily equipment safety checkout (wire rope and load chain)
- Daily equipment safety checkout (miscellaneous items)

Activity



- Ask the trainees to assemble together.
- Divide the class into five equal groups
- Tell them to perform troubleshooting and repairing of an EOT crane.

Skill Practice	Time	Resources
Troubleshooting and repairing of EOT crane	5 hours	EOT Crane Repairing tools and equipment

Do



- Provide tools and equipment required during troubleshooting and repairing of crane and its components to trainees.
- Tell them to inspect the parts of crane, identify the defects and then do the repairing as demonstrated in workshop.
- Guide the groups during the troubleshooting and repairing of crane and its components .
- Go around and make sure they are doing it properly.
- Share your inputs and insight to encourage the trainees and add onto what they are doing.

Notes for Facilitation



- Summarize the main points.
- Ask participants if they have any doubts.
- Encourage them to ask questions.
- Answer their queries satisfactorily.

Exercise



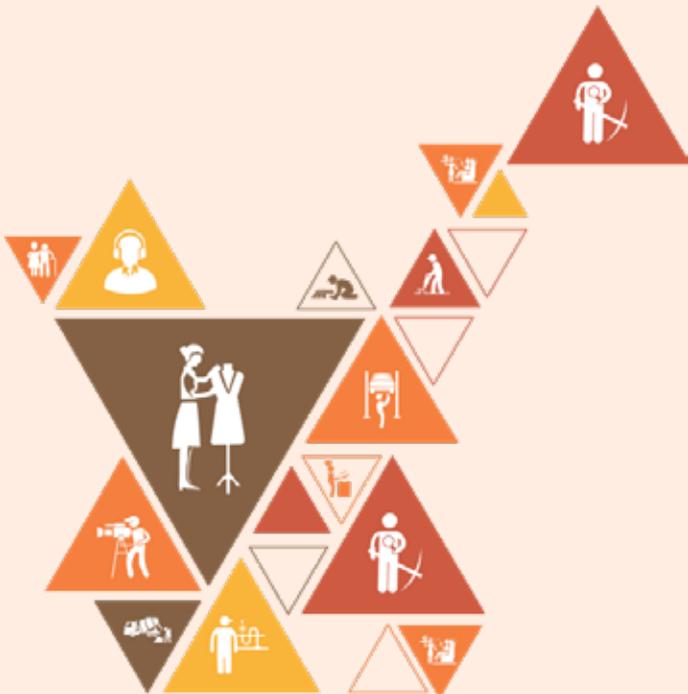
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7. Annexures

Annexure I: Training Delivery Plan

Annexure II: Assessment Criteria



Annexure I

Training Delivery Plan

Training Delivery Plan			
Program Name:	EOT Overhead Crane Operator		
Qualification Pack Name & Ref. ID	EOT Overhead Crane Operator, ISC/Q0901		
Version No.	4.0	Version Update Date	31-03-2025
Pre-requisites to Training (if any)	9th grade pass OR 8th grade pass with 1 year of (NTC/ NAC) after 8th OR 8th Class with 1 Year of experience OR 5th Class with 4 Years of experience		
Training Outcomes	By the end of this program, the participants will be able to: <ol style="list-style-type: none"> 1. Carry out preparatory activities such as preparing crane, inspection of crane parts etc. 2. Perform transferring of material to designated place by operating and moving and EOT crane by following organisational procedures. 3. Work effectively and efficiently as per schedules and timelines. 4. Implement safety practices. 5. Optimize the use of resources to ensure less wastage and maximum conservation. 		

Sl. No	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools/Aids	Duration
1	Introduction to the Job Role	Icebreaker	<ul style="list-style-type: none"> • Introduce each other • Build rapport with fellow students and the facilitator • Explain about Iron & steel industry • List types of Iron & Steel Industry • List role and responsibilities of EOT Crane operator 	ISC/N0008	Group Activity: Passing the Parcel	PPTs of Iron and steel manufacturing, Charts showing the same	T:5:00

Sl. No	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools/Aids	Duration
2	Follow Basic Health and Safety Practices at the Workplace	Hazards	<ul style="list-style-type: none"> Explain occupational health & safety Explain hazards and different types of hazards 	ISC/N0008 PC4, PC2, PC11, KA1, KB1, KB2, KB3, KB4, KB9, SA1, SA2	<ul style="list-style-type: none"> Class room lecture 	PPTs for OHAS related to Job Role	T: 8 hrs
		Safe working practices	<ul style="list-style-type: none"> Explain safe working practices at workshop. List various types of PPE 	ISC/N0008 PC1, PC2, PC3, PC5, PC10, PC13, KA2, KB5, KB6, KB7, KB8, KB10, KB11, KB18, KB21, KB22, KB23, KB24	<ul style="list-style-type: none"> Class room lecture Presentation Videos Demonstration 	Display Material for PPEs related to Job Role, Safety material, warning signs	T: 2 hrs P: 6 hrs
		Fire safety	<ul style="list-style-type: none"> List fire safety equipment Demonstrate emergencies, rescue and first aid procedures 	ISC/N0008 PC6, PC7, PC14, PC15, PC16, PC17, KB12, KB13, KB14, KB15, KB16, KB17	<ul style="list-style-type: none"> Group activity Presentation Videos Demonstration 	Fire safety equipment, fire extinguishers	T: 2 hrs P: 6 hrs
		Emergency procedures	<ul style="list-style-type: none"> Demonstrate emergency procedures Demonstrate rescue and first aid procedures 	CSC/N1335 PC6, PC15, PC16, PC21, PC22, PC25, SA5, SA6, SB1, SB8, SB9, SB11	<ul style="list-style-type: none"> Group activity Presentation Videos Demonstration 	Display Material for PPEs related to Job Role, Safety material, warning signs	T: 2 hrs P: 6 hrs
		Housekeeping and 5S safety	<ul style="list-style-type: none"> Explain need of housekeeping. List various elements of housekeeping Explain 5S safety system Explain phases of 5S safety 	ISC/N0008 PC5, PC11, PC12, PC16, SB2, SB3, SB4	<ul style="list-style-type: none"> Class room lecture Presentation Demonstration 	Cleaning material and equipment	T: 8 hrs
		Waste management	<ul style="list-style-type: none"> List various methods of waste management Demonstrate segregation of waste as per type of waste 	ISC/N0008 PC5, PC11	<ul style="list-style-type: none"> Presentation Videos Demonstration 	Waste material, different color bins	T: 3 hrs P: 5 hrs

Sl. No	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools/Aids	Duration
		Problem escalation and reporting	<ul style="list-style-type: none"> Explain problem management process Explain escalation matrix Explain accident and incident reporting Demonstrate how to write reports 	ISC/N0008 KB3, KB4, SB10, SB12, SB13, SB14	<ul style="list-style-type: none"> Classroom lecture Presentation Group activity 	Presentation, Sample Accident reports	T: 3 hrs P: 4 hrs
3	Effective Communication and Interpersonal Skills at Workplace	Communication skills	<ul style="list-style-type: none"> Define Communication Skills Elaborate process of communication List components of communication 	ISC/N0009 PC1, PC4 KU1, KU2 GS3, GS8	<ul style="list-style-type: none"> Classroom lecture Presentation Activity 	White board marker, duster, computer or Laptop attached to LCD projector	T:4:00 P:4:00
		Verbal and non-verbal communication	<ul style="list-style-type: none"> Define verbal communication and its importance List ways to improve verbal communication List components of non-verbal communication State importance of body language 	ISC/N0009 PC1 KU1, KU2 GS5, GS6, GS8	<ul style="list-style-type: none"> Classroom lecture Presentation Activity 	White board marker, duster, computer or Laptop attached to LCD projector	T:3:00 P:5:00
		Listening and writing skills	<ul style="list-style-type: none"> List requirements for good listening skills Discuss written communication medium 	ISC/N0009 PC1,, PC6, PC7, PC8, PC9 KU1, KU2 GS1, GS2, GS5, GS6, GS7	<ul style="list-style-type: none"> Classroom lecture Presentation Activity 	White board marker, duster, computer or Laptop attached to LCD projector	T:3:00 P:3:00
		Communication with PwD and different gender	<ul style="list-style-type: none"> Discuss the importance of PwD and gender sensitization. Demonstrate ways to communicate with People with Disability (PwD) Demonstrate ways to communicate with different gender people 	ISC/N0009 PC2, PC3, PC5 KU3 GS3, GS4	<ul style="list-style-type: none"> Classroom lecture Presentation Activity 	White board marker, duster, computer or Laptop attached to LCD projector	T:3:00 P:5:00
4	Prepare an EOT Crane for the Operation	EOT Crane	<ul style="list-style-type: none"> Explain about EOT crane List different categories and types of EOT crane. List specifications need to consider during selection of EOT crane 	ISC/N0913 PC1, PC2, KA6, KA7, KA8, KB1 SB1, SB2, SB3	<ul style="list-style-type: none"> Classroom lecture Presentation 	SOP for EOT crane setup and working, work instructions, Hand tools and power tools for EOT	T:8:00

Sl. No	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools/Aids	Duration
		Components of EOT crane	<ul style="list-style-type: none"> List various parts of an EOT Crane Explain functioning of parts of an EOT crane 	ISC/N0913 KA6, KA7, KA8, KB1, KB2, KB6, KB7 SB1, SB2, SB3	<ul style="list-style-type: none"> Classroom lecture Presentation 	EOT crane	T:8:00
		Hoists and Slings	<ul style="list-style-type: none"> Explain about hoists and slings List different types of slings List various hoisting equipment used during lifting 	ISC/N0913 PC1, PC2, KB1, KB2	<ul style="list-style-type: none"> Classroom lecture Presentation Demonstration 	Various types of hoists and slings	T:5:00 P:3:00
		Hoisting accessories	<ul style="list-style-type: none"> List various hoisting accessories used during lifting Explain functioning of various hoisting accessories 	ISC/N0913 PC3, PC4, PC5, KB1, KB2 SB1, SB2, SB3	<ul style="list-style-type: none"> Classroom lecture Presentation 	Eye bolts, shackles, turnbuckle, hook, cargo block, sheaves etc.	T:8:00
		Installation of hoisting accessories	<ul style="list-style-type: none"> Describe procedure of installation of hoisting accessories Demonstrate procedure of installation of hoisting accessories 	ISC/N0913 PC3, PC4, PC5, PC6 KA1, KA2, KA3, KA4, KA5 SA1, SA2, SA3	<ul style="list-style-type: none"> Classroom lecture Presentation Demonstration Activity 	Eye bolts, shackles, turnbuckle, hook, cargo block, sheaves etc. Hand tools	T:2:00 P:6:00
		Pre-use inspection of hoisting accessories	<ul style="list-style-type: none"> Describe pre-use inspection of hoisting accessories Demonstrate pre-use inspection of hoisting accessories 	ISC/N0913 PC3, PC4, PC5, PC6 KA1, KA2, KA3, KA4, KA5, KB3, KB4, KB5 SA1, SA2, SA3, SB4	<ul style="list-style-type: none"> Classroom lecture Presentation Demonstration Activity 	Eye bolts, shackles, turnbuckle, hook, cargo block, sheaves etc. Inspection tools	T:2:00 P:6:00
		Practice installation and use of hoisting accessories	<ul style="list-style-type: none"> Practice installation of hoisting accessories Practice use of hoisting accessories for lifting a load 	ISC/N0913 PC3, PC4, PC5, PC6 SA1, SA2, SA3, SB4, SB5	<ul style="list-style-type: none"> Demonstration Activity 	Eye bolts, shackles, turnbuckle, hook, cargo block, sheaves etc. Hand and inspection tools	P:8:00
		Knots	<ul style="list-style-type: none"> Explain knots Demonstrate how to make different types of knots 	ISC/N0913 KB1, KB2	<ul style="list-style-type: none"> Classroom lecture Presentation Demonstration 	Ropes	T:2:00 P:6:00

Sl. No	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools/Aids	Duration
		Hitches	<ul style="list-style-type: none"> Explain hitches Demonstrate how to make different types of hitches 	ISC/N0913 KB1, KB2	<ul style="list-style-type: none"> Classroom lecture Presentation Demonstration 	Ropes	T:2:00 P:6:00
		Load calculation	<ul style="list-style-type: none"> Explain Center of Gravity. Perform load and volume calculations 	ISC/N0913 KB1, KB2, KB4	<ul style="list-style-type: none"> Classroom lecture Presentation Activity 	Load	T:2:00 P:4:00
5	Operate an EOT crane to transfer material	Hand signals	<ul style="list-style-type: none"> Identify different hand signals need to follow during crane operation Explain meaning of hand signals 	ISC/N0914 PC2, KB1 SA1, SA2, SA3, SA4 SB4, SB5, SB6, SB7	<ul style="list-style-type: none"> Classroom lecture Presentation Demonstration 	Hand signal chart, PPT	T:2:00 P:6:00
		Preparation for crane operation	<ul style="list-style-type: none"> Explain inspection need to done before operation Explain preparation need to done before operation 	ISC/N0914 PC1, KA1, KA2, KA3, KA4, KA5, KB1, KB2, KB7 SA1, SA3, SA4	<ul style="list-style-type: none"> Classroom lecture Presentation Demonstration 	EOT Crane, SOP for EOT crane setup and working, work instructions, Hand tools and power tools for EOT	T:4:00 P:4:00
		Pre-use inspection of hoisting equipment	<ul style="list-style-type: none"> List various hoisting equipment Perform pre-inspection of hoisting equipment 	ISC/N0914 PC1, KA1, KA2, KA3, KA4, KA5, KB1, KB3	<ul style="list-style-type: none"> Classroom lecture Presentation Demonstration 	EOT Crane, Hand tools and power tools, hoisting accessories	T:2:00 P:6:00
		Practice 1 - inspection of hoisting equipment	<ul style="list-style-type: none"> Demonstrate inspection of eye bolt, slings, hooks Practice inspection of eye bolt, slings, hooks 	ISC/N0914 PC1, KA1, KA2, KA3, KA4, KA5, KB1, KB3	<ul style="list-style-type: none"> Presentation Demonstration Activity 	EOT Crane, Hand tools and power tools, hoisting accessories	P:8:00
		Practice 2 - inspection of hoisting equipment	<ul style="list-style-type: none"> Demonstrate inspection of shackles, hoists, crane parts etc. Practice inspection of shackles, hoists, crane parts etc. 	ISC/N0914 PC1, KA1, KA2, KA3, KA4, KA5, KB1, KB3	<ul style="list-style-type: none"> Presentation Demonstration Activity 	EOT Crane, Hand tools and power tools, hoisting accessories	P:8:00
		Safety considerations during crane operation	<ul style="list-style-type: none"> List common accidents occur Explain safety considerations during crane operation 	ISC/N0914 PC1, KA6, KA7, KA8, KB1, KB5, KB6	<ul style="list-style-type: none"> Classroom lecture Presentation Demonstration 	PPT, EOT crane	T:4:00 P:4:00

Sl. No	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools/Aids	Duration
		Safe hoisting practices	<ul style="list-style-type: none"> Describe safe hoisting practices Demonstrate safe hoisting practices 	ISC/N0914 PC3, KB1, KB4, KB5, KB6	<ul style="list-style-type: none"> Classroom lecture Presentation Demonstration 	EOT Crane, Hand tools and power tools, hoisting accessories	T:2:00 P:6:00
		Starting and stopping crane	<ul style="list-style-type: none"> Describe procedure of starting and stopping of crane Demonstrate procedure of starting and stopping of crane 	ISC/N0914 PC3, KB1, KB4, SA5, SA6, SA7, SA8, SA9	<ul style="list-style-type: none"> Classroom lecture Presentation Demonstration 	EOT Crane, Hand tools and power tools, hoisting accessories, load	T:1:00 P:7:00
		Handling asymmetrical loads	<ul style="list-style-type: none"> Describe handling of asymmetrical loads Demonstrate handling of asymmetrical loads 	ISC/N0914 PC3, KB1, KB4, SA5, SA6, SA7, SA8, SA9	<ul style="list-style-type: none"> Classroom lecture Presentation Demonstration 	EOT Crane, Hand tools and power tools, hoisting accessories, load	T:2:00 P:6:00
		Practice - Handling asymmetrical loads	<ul style="list-style-type: none"> Practice handling of asymmetrical loads 	ISC/N0914 PC3, KB1, KB4	<ul style="list-style-type: none"> Demonstration Activity 	EOT Crane, hoisting accessories, load	P:8:00
		Handling symmetrical loads	<ul style="list-style-type: none"> Describe handling of symmetrical loads Demonstrate handling of symmetrical loads 	ISC/N0914 PC3, KB1, KB4, SA5, SA6, SA7, SA8, SA9	<ul style="list-style-type: none"> Classroom lecture Presentation Demonstration 	EOT Crane, Hand tools and power tools, hoisting accessories, load	T:2:00 P:6:00
		Practice - Handling symmetrical loads	<ul style="list-style-type: none"> Practice handling of symmetrical loads 	ISC/N0914 PC3, KB1, KB4	<ul style="list-style-type: none"> Demonstration Activity 	EOT Crane, hoisting accessories, load	P:8:00
		Practice crane operation	<ul style="list-style-type: none"> Practice starting and stopping of crane Practice handling of asymmetrical and symmetrical loads 	ISC/N0914 PC3, KB1, KB4, SA5, SA6, SA7, SA8, SA9	<ul style="list-style-type: none"> Demonstration Activity 	EOT Crane, Hand tools and power tools, hoisting accessories, load	P:8:00
		EOT Crane maintenance	<ul style="list-style-type: none"> Describe maintenance schedule of EOT crane Demonstrate maintenance and lubrication of EOT crane 	ISC/N0914 PC4, KA1, KA2, KA3, KA4, KA5, KB1, KB3, KB5, KB6 SB1, SB2, SB3, SB8, SB9	<ul style="list-style-type: none"> Classroom lecture Presentation Demonstration Activity 	EOT Crane, inspection tools, hoisting accessories, lubricant	T:2:00 P:6:00

Sl. No	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools/Aids	Duration
		Practice EOT crane maintenance	<ul style="list-style-type: none"> List tools and equipment required for maintenance Practice maintenance and lubrication of EOT crane 	ISC/N0914 PC4, KA1, KA2, KA3, KA4, KA5, KB1, KB3, KB5, KB6 SB1, SB2, SB3, SB8, SB9	<ul style="list-style-type: none"> Demonstration Activity 	EOT Crane, inspection tools, hoisting accessories, lubricant	P:8:00
		Troubleshooting and repairing of crane	<ul style="list-style-type: none"> Describe procedure of troubleshooting and repairing of EOT crane Demonstrate procedure of troubleshooting and repairing of EOT crane 	ISC/N0914 PC4, KA1, KA2, KA3, KA4, KA5, KB1, KB3, KB5, KB6 SB1, SB2, SB3, SB8, SB9	<ul style="list-style-type: none"> Classroom lecture Presentation Demonstration 	EOT Crane, inspection tools, hoisting accessories	T:2:00 P:6:00
		Practice 1 - Troubleshooting and repairing of crane	<ul style="list-style-type: none"> List tools and equipment required for troubleshooting Practice troubleshooting of EOT crane 	ISC/N0914 PC4, KA1, KA2, KA3, KA4, KA5, KB1, KB3, KB5, KB6 SB1, SB2, SB3, SB8, SB9	<ul style="list-style-type: none"> Demonstration Activity 	EOT Crane, inspection and repairing tools, hoisting accessories	P:8:00
		Practice 2 - Troubleshooting and repairing of crane	<ul style="list-style-type: none"> List tools and equipment required for repairing Practice repairing of EOT crane components 	ISC/N0914 PC4, KA1, KA2, KA3, KA4, KA5, KB1, KB3, KB5, KB6 SB1, SB2, SB3, SB8	<ul style="list-style-type: none"> Demonstration Activity 	EOT Crane, inspection and repairing tools, hoisting accessories	P:8:00

Annexure II

Assessment Criteria

CRITERIA FOR ASSESSMENT OF TRAINEES

Assessment Criteria for EOT Overhead Crane Operator	
Job Role	EOT Overhead Crane Operator
Qualification Pack	ISC/Q0901, v4.0
Sector Skill Council	Iron and Steel

Sr. No.	Guidelines for Assessment
1	Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC.
2	The assessment for the theory part will be based on knowledge bank of questions created by the SSC.
3	Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training centre (as per assessment criteria below).
4	Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/ training centre based on these criteria.
5	In case of successfully passing only certain number of NOSs, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack.
6	In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack
7	Recommended Pass % - 70

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
NOS 1: Use basic health and safety practices at the work place (ISC/N0008)				
Maintain safe and secure working environment	10	14	-	6
PC1. identify hazardous activities and the possible causes of risks or accidents in the workplace	2	2	-	1
PC2. follow safe working practices while dealing with hazards to ensure safety of self and others	2	3	-	1
PC3. use appropriate protective clothing/equipment for specific tasks and work	1	2	-	1
PC4. follow appropriate safety practices while working in and around trenches, elevated places and confined areas	2	1	-	-
PC5. lift heavy objects safely using correct procedures	1	2	-	1
PC6. carry out routine check of the machine for identifying potential hazards	1	2	-	1
PC7. report any identified breaches in health, safety and security policies and procedures to the designated person	1	2	-	1
Emergencies, rescue and first aid procedures	6	9	-	5
PC8. use appropriate type of fire extinguisher	1	1	-	1
PC9. apply appropriate rescue techniques during fire hazard	1	2	-	1
PC10. provide appropriate first aid procedure to victims wherever required eg.in case of bleeding, burns, choking, electric shock etc.	2	2	-	1
PC11. follow emergency procedures such as raising alarm, safe evacuation etc.	1	2	-	1

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. attend safety training and fire drills to respond promptly during an emergency	1	2	-	1
Health and hygiene	2	6	-	2
PC13. follow regular cleaning and disinfection practices at work place using appropriate techniques and materials	1	2	-	1
PC14. follow hand hygiene practices at work place using appropriate techniques and materials	1	2	-	1
PC15. report regarding the contagious illness of self or people in close contact	-	1	-	-
PC16. avoid contact with ill people and self-isolate in a similar situation	-	1	-	-
Housekeeping and waste management	7	12	-	5
PC17. follow the fundamentals of 5S for housekeeping	2	3	-	2
PC18. ensure good housekeeping in order to prevent hazards and accidents	1	2	-	-
PC19. store the material, tools and equipment in the correct location and in good condition	1	2	-	-
PC20. segregate waste into different categories	1	2	-	1
PC21. identify recyclable, non-recyclable and hazardous waste	1	1	-	1
PC22. dispose non-recyclable, recyclable and reusable waste appropriately at identified location	1	2	-	1
Material and energy conservation	5	9	-	2

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC23. identify ways to optimize usage of material in various tasks/ activities/processes	1	2	-	-
PC24. check for spills/leakages in various tasks/activities/processes	1	2	-	1
PC25. plug spills/leakages and escalate to appropriate authority if unable to rectify	1	2	-	1
PC26. check if the equipment/ machine is functioning normally before commencing work and rectify wherever required	1	2	-	-
PC27. ensure electrical equipment and appliances are properly connected and turned off when not in use	1	1	-	-
NOS Total	20	50	-	20
NOS 2: Work effectively with others (ISC/N0009)				
Communicate effectively with colleagues and others	13	20	-	9
PC1. coordinate with colleagues to share work, as per the workload in order to achieve team goals	3	5	-	2
PC2. maintain clear communication with colleagues and others, wherever needed, through all means i.e. face-to-face, telephonic or written	5	7	-	3
PC3. adjust communication styles to reflect gender and persons with disability (PwD) sensitivity	3	4	-	2
PC4. respect all colleagues and co-workers	1	2	-	1
PC5. resolve conflicts by communicating with colleagues and other departments	1	2	-	1
Interact with supervisor	8	14	-	6

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC6. identify work requirements by receiving instructions from reporting supervisor	2	3	-	1
PC7. escalate problems to supervisors that cannot be handled	2	3	-	2
PC8. report the completed work	2	3	-	1
PC9. interact with the reporting supervisor about any possible hazards and safety concerns	2	5	-	2
Follow appropriate behaviour at work place	9	16	-	5
PC10. extend help to people with Disability (PwD) at workplace, if required	2	4	-	2
PC11. empathize with people with disability	2	4	-	1
PC12. adopt a gender neutral behavior	2	4	-	1
PC13. adopt responsible and disciplined behaviours at the workplace	3	4	-	1
NOS Total	30	50	-	20
NOS 3: Preparing crane for the operation (ISC/N0913)				
Obtain work instructions from shopfloor	5	10	-	3
PC1. identify the work requirements from the instructions received from supervisor	1	2	-	-
PC2. interpret the different signals used in the shop floor	2	4	-	2
PC3. respond to the signal when received and prepare for transfer of material	2	4	-	1

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Inspect and prepare the crane system for transfer of material	10	15	-	7
PC4. check the condition of the ground (e.g. building site) before setting up the crane	2	3	-	1
PC5. check the movement of the crane – cross trolley and long trolley, lifting hook, brake, before operating	3	4	-	2
PC6. check crane cabin/pendant/ remote control instruments to make sure that loads hooked on their machines are within safe working limits	3	4	-	2
PC7. inspect working condition of brake system (hoist brake, cross trolley brake and long travel brake)	2	4	-	2
NOS Total	15	25	-	10
NOS 4: Operating crane to transfer material (ISC/N0914)				
Operate the crane to transfer material	15	25	-	10
PC1. identify crane capacity for loading material safely	2	2	-	2
PC2. observe and follow the signals given by shop floor for moving and positioning of the load	2	3	-	2
PC3. move the crane and position the hook so that shop floor personnel can attach loads, slings, shackles and chains	2	4	-	1
PC4. operate the crane and transfer the material to the designated place	3	7	-	2
PC5. unload the material at the designated place properly as per the work instructions	3	5	-	1

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC6. maintain cranes by inspecting them for defects or wear, lubricate ropes and winches, and replace worn cables	3	4	-	2
NOS Total	15	25	-	10
NOS 5: Employability Skills (30 Hours) (DGT/VSQ/N0101)				
Introduction to Employability Skills	1	1	-	-
PC1. understand the significance of employability skills in meeting the job requirements	-	-	-	-
Constitutional values - Citizenship	1	1	-	-
PC2. identify constitutional values, civic rights, duties, personal values and ethics and environmentally sustainable practices	-	-	-	-
Becoming a Professional in the 21st Century	1	3	-	-
PC3. explain 21st Century Skills such as Self- Awareness, Behavior Skills, Positive attitude, self-motivation, problem-solving, creative thinking, time management, social and cultural awareness, emotional awareness, continuous learning mindset etc.	-	-	-	-
Basic English Skills	2	3	-	-
PC4. speak with others using some basic English phrases or sentences	-	-	-	-
Communication Skills	1	1	-	-
PC5. follow good manners while communicating with others	-	-	-	-
PC6. work with others in a team	-	-	-	-
Diversity & Inclusion	1	1	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC7. communicate and behave appropriately with all genders and PwD	-	-	-	-
PC8. report any issues related to sexual harassment	-	-	-	-
Financial and Legal Literacy	3	4	-	-
PC9. use various financial products and services safely and securely	-	-	-	-
PC10. calculate income, expenses, savings etc.	-	-	-	-
PC11. approach the concerned authorities for any exploitation as per legal rights and laws	-	-	-	-
Essential Digital Skills	4	6	-	-
PC12. operate digital devices and use its features and applications securely and safely	-	-	-	-
PC13. use internet and social media platforms securely and safely	-	-	-	-
Entrepreneurship	3	5	-	-
PC14. identify and assess opportunities for potential business	-	-	-	-
PC15. identify sources for arranging money and associated financial and legal challenges	-	-	-	-
Customer Service	2	2	-	-
PC16. identify different types of customers	-	-	-	-
PC17. identify customer needs and address them appropriately	-	-	-	-
PC18. follow appropriate hygiene and grooming standards	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Getting ready for apprenticeship & Jobs	1	3	-	-
PC19. create a basic biodata	-	-	-	-
PC20. search for suitable jobs and apply	-	-	-	-
PC21. identify and register apprenticeship opportunities as per requirement	-	-	-	-
NOS Total	20	30	-	-



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978-1-111-22222-45-7