



What are Occupational Standards (OS)?

- OS describe what individuals need to do, know and understand in order to carry out a particular job role or function
- OS are performance standards that individuals must achieve when carrying out functions in the workplace, together with specifications of the underpinning knowledge and understanding



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Introduction

Qualifications Pack - Bearing Maintenance

SECTOR: Iron & Steel

SUB-SECTOR: Coke Making, Agglomeration, Iron Making, Steel Making, Hot Roll Mill, Cold Roll Mill, Mechanical Maintenance, Electrical Maintenance, Ferro Alloys, Raw Material Handling

REFERENCE ID: ISC/Q0017

ALIGNED TO: NCO -2004/NIL

Title of Job: The job is to inspect, identify the problems in the equipment, rectify the root causes for e.g. leakages, replaces the bearings, lubricates the bearings, ensures fitness of all types of bearings in the plant and carry out routine maintenance.

Personal Attributes: This job requires the individual to work independently as well as in teams. He should be physically fit, not having colour blindness , having analytical skills, problem solving attitude, high concentration levels and willingness to work in a factory environment.



Job Details

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|--------------------------|---|------------------|------------|
| Qualifications Pack Code | ISC/Q0017 | | |
| Job Role | Bearing Maintenance | | |
| Credits(NSQF) | TBD | Version number | 1.0 |
| Industry | Iron & Steel | Drafted on | 08/09/2014 |
| Sub-sector | Coke Making, Agglomeration, Iron Making, Steel Making, Hot Roll Mill, Cold Roll Mill, Mechanical Maintenance, Electrical Maintenance, Ferro Alloys, Raw Material Handling | Last reviewed on | 30/12/2014 |
| Occupation | Maintenance | Next review date | 30/12/2015 |



| Job Role | Bearing Maintenance |
|---|---|
| Role Description | The job holder inspects, identifies the problems in the equipment, rectifies the root causes for e.g. leakages, replaces the bearings, lubricates the bearings, ensures fitness of all types of bearings in the plant and carry out routine maintenance. |
| NSQF level | 3 |
| Minimum Educational Qualifications | 10 th Pass |
| Maximum Educational Qualifications | ITI pass |
| Training (Suggested but not mandatory) | <ul style="list-style-type: none"> • 2 weeks hands on training (mandatory) • Machining, welding, gas cutting, assembling (mandatory) • Working knowledge of tools & fixtures (mandatory) • 5S and safety practices (mandatory) • Working at heights, confined spaces & high temperatures |
| Experience | <ul style="list-style-type: none"> • 0-2 years with ITI, otherwise 3-5 years (with 10th pass) • In lieu of minimum qualification the incumbent should have minimum 6 to 7 years relevant experience in the similar field/function as utility hand/helper |
| Occupational Standards (OS) | <p>Compulsory:</p> <p>ISC/N0046: Understand the assigned job of bearing maintenance ISC/N0047: Prepare for bearing maintenance operation ISC/N0048: Carry out the assigned bearing maintenance operation ISC/N0008: Use basic health and safety practices at the work place ISC/N0009: Works effectively with others</p> <p>Optional: N/A</p> |
| Performance Criteria | As described in the relevant NOS units |



Definitions

| Keywords /Terms | Description |
|---------------------------------------|--|
| Core Skills/Generic Skills | Core Skills or Generic Skills are a group of skills that are key to learning and working in today's world. These skills are typically needed in any work environment. In the context of the NOS, these include communication related skills that are applicable to most job roles. |
| Function | Function is an activity necessary for achieving the key purpose of the sector, occupation, or area of work, which can be carried out by a person or a group of persons. Functions are identified through functional analysis and form the basis of NOS. |
| Job role | Job role defines a unique set of functions that together form a unique employment opportunity in an organization. |
| Knowledge and Understanding | Knowledge and Understanding are statements which together specify the technical, generic, professional and organizational specific knowledge that an individual needs in order to perform to the required standard. |
| National Occupational Standards (NOS) | NOS are Occupational Standards which apply uniquely in the Indian context |
| Occupation | Occupation is a set of job roles, which perform similar/related set of functions in an industry. |
| Organisational Context | Organisational Context includes the way the organization is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility. |
| Performance Criteria | Performance Criteria are statements that together specify the standard of performance required when carrying out a task. |
| Qualifications Pack(QP) | Qualifications Pack comprises the set of NOS, together with the educational, training and other criteria required to perform a job role. A Qualifications Pack is assigned a unique qualification pack code. |
| Qualifications Pack Code | Qualifications Pack Code is a unique reference code that identifies a qualifications pack. |
| Scope | Scope is the set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on the quality of performance required. |
| Sector | Sector is a conglomeration of different business operations having similar businesses and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests. |



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| Sub-Sector | Sub-sector is derived from a further breakdown based on the characteristics and interests of its components. |
| Sub-functions | Sub-functions are sub-activities essential to fulfil the achieving the objectives of the function. |
| Technical Knowledge | Technical Knowledge is the specific knowledge needed to accomplish specific designated responsibilities. |
| Unit Code | Unit Code is a unique identifier for a NOS unit, which can be denoted with an 'N' |
| Unit Title | Unit Title gives a clear overall statement about what the incumbent should be able to do. |
| Vertical | Vertical may exist within a sub-sector representing different domain areas or the client industries served by the industry. |
| Keywords /Terms | Description |
| NOS | National Occupational Standard(s) |
| NSQF | National Skills Qualifications Framework |
| OEM | Original Equipment Manufacturer |
| OS | Occupational Standard(s) |
| QP | Qualifications Pack |
| 5 S | Technique of maintaining orderliness –Japanese terminology |
| CP | Control Plan |
| WI | Work Instructions |

Acronyms



ISC/N0046: Understand the assigned job of bearing maintenance



Overview

This NOS is about understanding the assigned job of bearing maintenance in accordance with the checklist and get any clarifications on the same



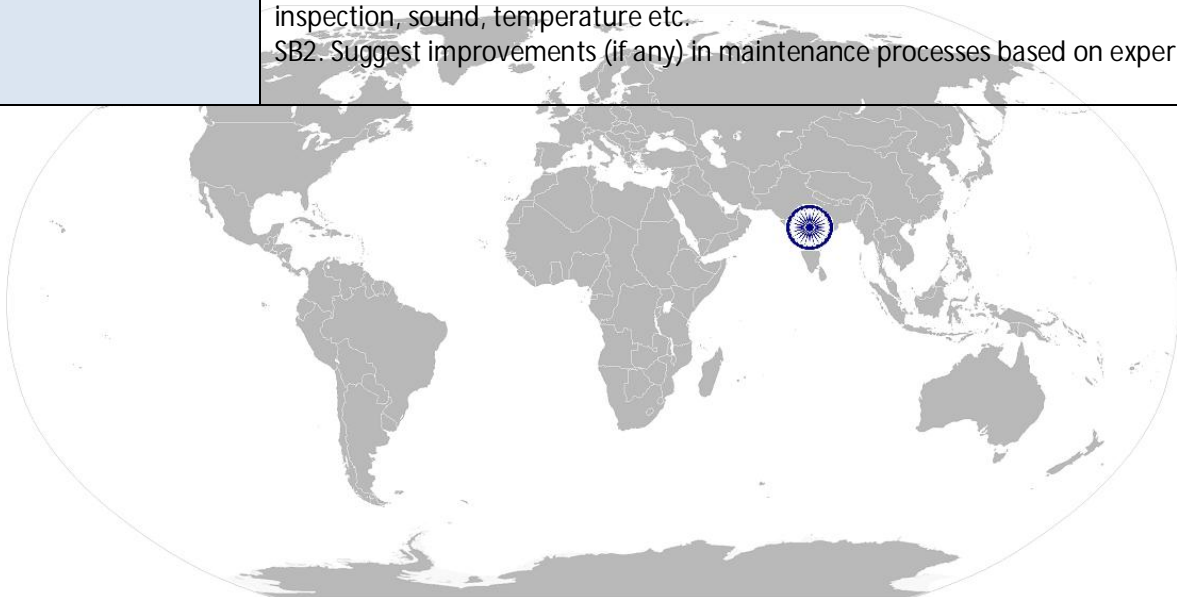
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| Unit Code | ISC/N0046 |
| Unit Title (Task) | Understand the assigned job of bearing maintenance |
| Description | This unit is about understanding the assigned job of bearing maintenance in accordance with the checklist, obtain any clarifications on the same and identify the tools and tackles that would be needed to carry out the job. |
| Scope | <p>This unit/task covers the following:</p> <ul style="list-style-type: none"> Understand the assigned job of bearing maintenance in accordance with the instructions / checklist Understand the engineering drawings of the equipment for bearing maintenance Seek clarifications with respect to the equipment, drawings, if any Identify the tools, tackles and bearings that are required to carry out the assigned job of bearing maintenance |
| Performance Criteria (PC) w.r.t. the Scope | |
| Element | Performance Criteria |
| Understand the assigned job of bearing maintenance in accordance with the instructions / checklist | <p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. Interpret the checklist and understand the bearing maintenance job requirements</p> <p>PC2. Identify classifications of bearings e.g. single row radial ball bearing, roller bearing, angular contact ball bearing, self-aligning bearing, special bearing races, cylindrical roller bearing, single/double row tapered roller bearing, thrust bearing etc.</p> <p>PC3. Understand the cleaning procedure of bearing and related parts</p> <p>PC4. Understand the dimensions and related parts of bearing</p> <p>PC5. Plan, as appropriate to carry out the bearing maintenance job</p> |
| Understand the engineering drawings of the equipment for bearing maintenance | <p>To be competent, the user/individual on the job must be able to:</p> <p>PC6. Understand sections, views, scale of measurement used in the engineering drawing of the equipment</p> <p>PC7. Understand the symbols used in the engineering drawings</p> <p>PC8. Understand other specifications and identify the sequence of activities required for bearing maintenance/changing</p> <p>PC9. Read and interpret engineering drawings to ensure correct limits, tolerance and fits of bearings</p> |
| Seek clarifications with respect to the equipment, drawings, if any | <p>To be competent, the user/individual on the job must be able to:</p> <p>PC10. Identify any clarifications that he wants to seek with respect to the given equipment drawing</p> <p>PC11. Identify and seek clarifications with respect to bearings with all related parts</p> <p>PC12. Recognize whom to contact for clarifications on the engineering design</p> <p>PC13. Escalate the concern to the supervisor or shift-in-charge, if needed</p> |



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| <p>Identify the tools, tackles and bearing that are required to carry out the assigned job of bearing maintenance</p> | <p>To be competent, the user/individual on the job must be able to:</p> <p>PC14. Identify tools, tackles & equipment (lifting equipment, various sizes of spanner, dial gauge, Vernier calliper, filler gauge, torque range, bearing heating furnace etc.) required to perform the bearing maintenance operation</p> <p>PC15. Identifying the different types of bearings for maintenance and changing</p> <p>PC16. Ask helper to carry tools required to the desired work site</p> <p>PC17. Report to stores / supervisor in case of non-availability of tools & tackles or stock-out of spares</p> |
| <p>Element</p> | <p>Knowledge and Understanding</p> |
| <p>A. Organisational Context (Knowledge of the Company/ Organisation and its processes)</p> | <p>The user/individual on the job needs to know and understand:</p> <p>KA1. Quality and damage checks to be done and importance of the same</p> <p>KA2. Risk and impact of not following defined procedures/work instructions</p> <p>KA3. Escalation matrix for reporting identified issues</p> |
| <p>B. Technical Knowledge</p> | <p>The user/individual on the job needs to know and understand:</p> <p>KB1. Engineering drawings of the equipments</p> <p>KB2. Knowledge of tools, tackles and equipment (lifting equipment, various sizes of spanner, dial gauge, Vernier calliper, filler gauge, torque range, bearing heating furnace etc.) to be used for the bearing maintenance job</p> <p>KB3. Knowledge of types of lubricants and their respective usage</p> <p>KB4. Knowledge of various types of bearing maintenance and changing procedure</p> <p>KB5. Understanding of normal running characteristics of relevant equipment</p> <p>KB6. Implications of not adhering to sequence of activities and operations for bearing maintenance</p> <p>KB7. Units of measurement</p> <p>KB8. Response to emergencies e.g. Power failures ,fire and system failures</p> |
| <p>Skills (S) w.r.t. the scope</p> | |
| <p>Element</p> | <p>Skills</p> |
| <p>A. Core Skills/ Generic Skills</p> | <p>Writing Skills</p> |
| | <p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. Construct simple sentences and express ideas clearly through written communication</p> <p>SA2. Fill up appropriate technical forms, process charts, activity logs in required format of the company</p> |
| | <p>Reading and Understanding Skills</p> |
| | <p>The user/individual on the job needs to know and understand how to:</p> |



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| | SA3. Read and interpret engineering and machine drawings SA4. Read and understand manuals, health and safety instructions, memos, reports, job cards, etc. |
| | Oral Communication (Listening and Speaking skills) |
| | The user/individual on the job needs to know and understand how to: SA5. Express statements, opinions or information clearly so that others can hear and understand SA6. Respond appropriately to queries SA7. Communicate with team members and supervisor |
| B. Professional Skills | Analytical Thinking |
| | The user/individual on the job needs to know and understand how to: SB1. Diagnose common problems in the bearing functioning based on visual inspection, sound, temperature etc. SB2. Suggest improvements (if any) in maintenance processes based on experience |





NOS Version Control

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|---------------------|---|------------------|------------|
| NOS Code | ISC/N0046 | | |
| Credits(NSQF) | TBD | Version number | 1.0 |
| Industry | Iron and steel | Drafted on | 08/09/2014 |
| Industry Sub-sector | Coke Making, Agglomeration, Iron Making, Steel Making, Hot Roll Mill, Cold Roll Mill, Mechanical Maintenance, Electrical Maintenance, Ferro Alloys, Raw Material Handling | Last reviewed on | 30/12/2014 |
| Occupation | Maintenance | Next review date | 30/12/2015 |





ISC/N0047: Prepare for bearing maintenance operation



Overview

This NOS is about inspecting the equipment for scheduled maintenance or defects and prepares for operation for bearing maintenance



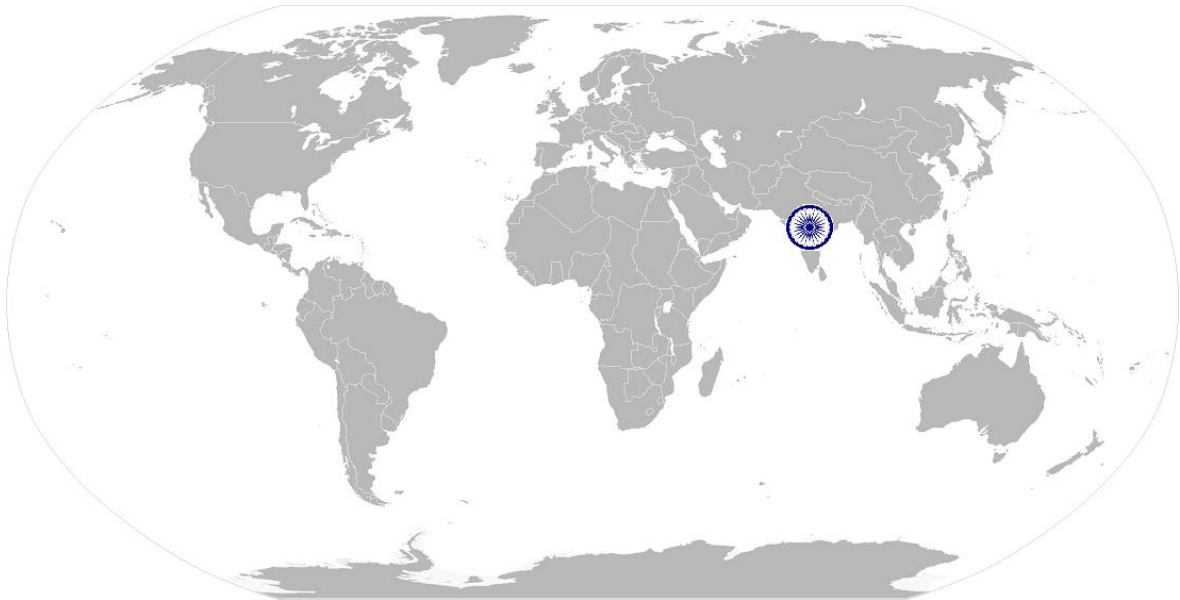
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| Unit Code | ISC/N0047 |
| Unit Title (Task) | Prepare for bearing maintenance operation |
| Description | This unit is about inspecting the equipment for scheduled maintenance or defects and prepares for operation for bearing maintenance. |
| Scope | This unit/task covers the following: <ul style="list-style-type: none"> Reach the site and inspect the equipment for scheduled bearing maintenance and/or defects and identify cause of problem Prepare tools, tackles, spares, material required for bearing maintenance |
| Performance Criteria (PC) w.r.t. the Scope | |
| Element | Performance Criteria |
| Reach the site and inspect the equipment for scheduled bearing maintenance and/or defects and identify cause of problem | To be competent, the user/individual on the job must be able to: <p>PC1. Reach the site with desired tools, tackles and equipment</p> <p>PC2. Plan for job duration and understand the process as per SOP</p> <p>PC3. Arrange necessary instruments to carry out maintenance (dial gauge, spirit level, vibration measuring instrument and tools for dismantling and assembling e.g. spanners, torque wrench, power tools etc.)</p> <p>PC4. Identify the root cause of the problem, if any (radial run out of assemble bearing, face run out with race way, face run out with bore, race way parallel with face, outside face inclination and thickness variance)</p> <p>PC5. Identify and collect bearings as per drawing</p> <p>PC6. Plan for storage of new bearing and old bearing at job site</p> <p>PC7. Ensure not to store multiple bearings on top of each other</p> <p>PC8. Ensure not to store large bearings in the upright position</p> <p>PC9. Understand the hazardous area of work and necessary precautions to be taken to execute the job as well as safe handling of equipments</p> |
| Prepare tools, tackles, spares, material required for bearing operation | To be competent, the user/individual on the job must be able to: <p>PC10. Prepare tools, tackles, the list of spares (lifting equipment, various sizes of spanner, dial gauge, Vernier calliper, filler gauge, torque range, bearing heating furnace etc.) required for completion of bearing maintenance/change job and ensure availability at work site</p> <p>PC11. Ensure that tools and tackles match the standard specifications</p> <p>PC12. Ensure tools, tackles and equipment required for assembly are free from physical damage and ready for bearing maintenance/changing operation</p> <p>PC13. Report damaged / defective components of equipment and bearings as per the escalation matrix</p> |
| Element | Knowledge and Understanding |
| A. Organisational | The user/individual on the job needs to know and understand: |



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| Context (Knowledge of the Company/ Organisation and its processes) | KA1. Quality and damage checks to be done and importance of the same KA2. Risk and impact of not following defined procedures/work instructions KA3. Escalation matrix for reporting identified issues |
| B. Technical Knowledge | The user/individual on the job needs to know and understand: KB1. Engineering drawings of the equipments KB2. Understanding of normal running characteristics of relevant equipment KB3. Possible causes of common problems during assembly & their remedies KB4. Knowledge of tools, tackles and measuring instruments (lifting equipment, various sizes of spanner, dial gauge, Vernier calliper, filler gauge, torque range, bearing heating furnace etc.) required for the operation of bearing maintenance KB5. Standard specifications of spare parts KB6. Knowledge of types of lubricants and their respective usage KB7. Knowledge of various types of bearing maintenance and changing procedure KB8. Implications of not adhering to sequence of activities and operations for bearing maintenance KB9. Units of measurement KB10. Response to emergencies e.g. Power failures ,fire and system failures |
| Skills (S) w.r.t. the scope | |
| Element | Skills |
| A. Core Skills/ Generic Skills | <p>Writing Skills</p> <p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. Construct simple sentences and express ideas clearly through written communication SA2. Fill up appropriate technical forms, activity logs in required format of the company</p> <p>Reading and Understanding Skills</p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SA3. Read and understand manuals, health and safety instructions, memos, reports, job cards, specifications of spare parts etc.</p> <p>Oral Communication (Listening and Speaking skills)</p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SA4. Express statements, opinions or information clearly so that others can hear and understand SA5. Respond appropriately to queries SA6. Communicate with supervisor, team members, other departments e.g. – stores, operations, etc.</p> |



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| B. Professional Skills | Analytical Thinking |
| | The user/individual on the job needs to know and understand how to: SB1. Diagnose common problems in the bearing functioning based on visual inspection, sound, temperature etc. SB2. Suggest improvements(if any) in assembly process based on experience |





NOS Version Control

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| NOS Code | ISC/N0047 | | |
| Credits(NSQF) | TBD | Version number | 1.0 |
| Industry | Iron and steel | Drafted on | 08/09/2014 |
| Industry Sub-sector | Coke Making, Agglomeration, Iron Making, Steel Making, Hot Roll Mill, Cold Roll Mill, Mechanical Maintenance, Electrical Maintenance, Ferro Alloys, Raw Material Handling | Last reviewed on | 30/12/2014 |
| Occupation | Maintenance | Next review date | 30/12/2015 |





ISC/N0048: Carry out bearing maintenance operation



Overview

This NOS is about carrying out the operations in terms of rectifying the identified problem and carrying out operation for bearing maintenance



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| Unit Code | ISC/N0048 |
| Unit Title (Task) | Carry out bearing maintenance operation |
| Description | This NOS is about rectifying the identified problem and carrying out operation for bearing maintenance |
| Scope | <p>This unit/task covers the following:</p> <ul style="list-style-type: none"> • Conduct routine maintenance or rectify the problem, as appropriate • Ensure lubrication of bearings and monitor vibration, temperature using appropriate equipment • Conduct tests to ensure fitness • Communicate to supervisor about completion of work |
| Performance Criteria (PC) w.r.t. the Scope | |
| Element | Performance Criteria |
| Conduct routine maintenance or rectify the problem, as appropriate | <p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. Interpret the SOP and plan for handling the parent equipment, dismantling, assembling of bearing</p> <p>PC2. Understand the checklist and ensure all assembly check points are measured and correctly recorded</p> <p>PC3. Dismantle the equipment, as needed for bearing maintenance and changing activities</p> <p>PC4. Correct the defects in the bearing or replace the defective bearing</p> <p>PC5. Assemble the bearing related parts according to the drawings</p> <p>PC6. Fasten mechanical components/ subassemblies together using screws, bolts, and collars using hand/ power tools for bearing replacement</p> <p>PC7. Set and adjust linkages, tensions and clearances of assembled components to specifications using fixed gauges and hand tools</p> <p>PC8. Re assemble the bearing related parts post correcting the defect</p> <p>PC9. Understand and ensure all necessary steps are completed before start-up of the machine</p> |
| Ensure lubrication of bearings and monitor vibration, temperature using appropriate equipment | <p>To be competent, the user/individual on the job must be able to:</p> <p>PC10. Identify and use appropriate vibration and temperature measuring instruments</p> <p>PC11. Understand different types of bearings (anti friction, frictional bearing and their classification) the procedure of lubrication</p> <p>PC12. Assemble, dismantle and measure gaps of different anti friction bearings e.g. ball bearing, roller bearing, taper roller bearing etc.</p> <p>PC13. Assemble, dismantle and measure gaps of Babbitt bearing</p> <p>PC14. Understand and conduct hand scraping of Babbitt bearing</p> <p>PC15. Ensure lubrication of bearings prior to starting use of equipment</p> |



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| | <p>PC16. Record and monitor that temperature and vibration are at desirable levels</p> <p>PC17. Identify any deviations from desirable levels and take necessary actions to correct them</p> |
| Conduct tests to ensure fitness | <p>To be competent, the user/individual on the job must be able to:</p> <p>PC18. Ensure alignment of bearing related parts and with the engineering drawings</p> <p>PC19. Check bearing vibrations to ensure they are within desired limits</p> <p>PC20. Test the machine to ensure it is fit to use before handover</p> <p>PC21. Record the test results in the prescribed format of the organization</p> |
| Communicate to supervisor about completion of work | <p>To be competent, the user/individual on the job must be able to:</p> <p>PC22. Ensure all activities are complete according to checklist</p> <p>PC23. Communicate to supervisor on completion of given job and/or in case of any deviations from checklist</p> |
| Element | Knowledge and Understanding |
| A. Organisational Context (Knowledge of the Company/ Organisation and its processes) | <p>The user/individual on the job needs to know and understand:</p> <p>KA1. Quality and damage checks to be done and importance of the same</p> <p>KA2. Contact person across departments for spare parts, information etc.</p> <p>KA3. Escalation matrix for reporting identified issues</p> <p>KA4. Risk and impact of not following defined procedures/work instructions</p> |
| B. Technical Knowledge | <p>The user/individual on the job needs to know and understand:</p> <p>KB1. Different lubricants and their applications</p> <p>KB2. Knowledge of different bearings and their applications, instruments used to measure temperature and vibration</p> <p>KB3. Different instruments for measurement of temperature and vibration</p> <p>KB4. Assembling techniques such as aligning, bending, fixing, mechanical jointing, threaded jointing, sealing, light fitting</p> <p>KB5. Steps required to assemble/ dismantle an equipment with a given design</p> <p>KB6. Checks that need to be made to ensure that equipment is safe and ready to use</p> <p>KB7. Limits, fits and tolerances of the bearings and equipments of bearings</p> <p>KB8. Possible causes of common problems during assembly & their remedies</p> <p>KB9. Units of measurement</p> <p>KB10. Response to emergencies e.g. Power failures ,fire and system failures</p> <p>KB11. Use of measuring instruments e.g.- Vernier, Micro meter, dial gauge, filler gauge, torque wrench etc.</p> <p>KB12. Compilation of test results in prescribed format</p> |
| Skills (S) w.r.t. the scope | |
| Element | Skills |
| A. Core Skills/ | <p>Writing Skills</p> <p>The user/ individual on the job needs to know and understand how to:</p> |



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| Generic Skills | SA1. Construct simple sentences and express ideas clearly through written communication SA2. Fill up appropriate technical forms, process charts, activity logs in required format of the company |
| | Reading and Understanding Skills |
| | The user/individual on the job needs to know and understand how to: SA3. Read and interpret engineering and machine drawings SA4. Read and understand manuals, memos, reports, job cards, etc. |
| | Oral Communication (Listening and Speaking skills) |
| B. Professional Skills | The user/individual on the job needs to know and understand how to: SA5. Express statements, opinions or information clearly so that others can hear and understand SA6. Respond appropriately to queries SA7. Communicate with supervisor, team members, other departments e.g. – operations, stores etc. |
| | Analytical Thinking |
| | The user/individual on the job needs to know and understand how to: SB1. Diagnose common problems in the bearing functioning based on visual inspection, sound, temperature etc. SB2. Suggest improvements(if any) in process based on experience |



NOS Version Control

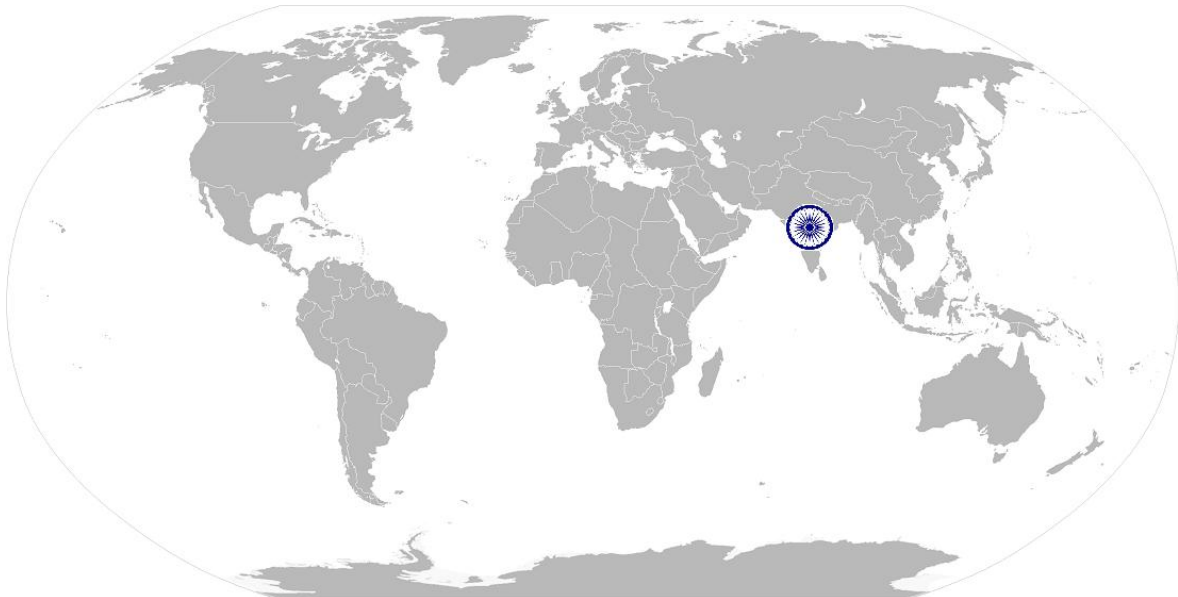
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| NOS Code | ISC/N0048 | | |
| Credits(NSQF) | TBD | Version number | 1.0 |
| Industry | Iron and steel | Drafted on | 08/09/2014 |
| Industry Sub-sector | Coke Making, Agglomeration, Iron Making, Steel Making, Hot Roll Mill, Cold Roll Mill, Mechanical Maintenance, Electrical Maintenance, Ferro Alloys, Raw Material Handling | Last reviewed on | 30/12/2014 |
| Occupation | Maintenance | Next review date | 30/12/2015 |





ISC/N0008: Use basic health and safety practices at the workplace

National Occupational Standards



Overview

This unit covers health, safety and security at the workplace. This includes procedures and practices that candidates need to follow to help maintain a healthy, safe and secure work environment.



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| Unit Code | ISC/N0008 |
| Unit Title (Task) | Use basic health and safety practices at the work place |
| Description | <p>This OS unit is about knowledge and practices relating to health, safety and security that candidates need to use in the workplace. It covers responsibilities towards self, others, assets and the environment.</p> <p>It includes understanding of risks and hazards in the workplace, along with common techniques to minimize risk, deal with accidents, emergencies, etc.</p> |
| Scope | <p>This unit/task covers the following:</p> <ul style="list-style-type: none"> • Health and safety procedures • Fire safety procedures • Emergencies, rescue and first aid procedures |
| Performance Criteria (PC) w.r.t. the Scope | |
| Element | Performance Criteria |
| Health and safety procedures | <p>The user/individual on the job should be able to:</p> <p>PC1. Use protective clothing/equipment for specific tasks and work conditions</p> <p>Protective clothing includes:</p> <ul style="list-style-type: none"> • Leather or asbestos gloves • Flame proof aprons • Flame proof overalls buttoned to neck • Cuff less (without folds) trousers • Reinforced footwear • Helmets/hard hats • Cap and shoulder covers • Ear defenders/plugs • Safety boots • Knee pads • Particle masks • Glasses/gloves/visors <p>Equipment includes:</p> <ul style="list-style-type: none"> • Hand shields • Machine guards • Residual current devices • Shields • Dust sheets • Respirator <p>PC2. State the name and location of people responsible for health and safety in the</p> |



workplace

Various areas are listed below:

- On chemical containers
- Equipment
- Packages
- Inside buildings
- Open areas, public places etc.

PC3. State the names and location of documents that refer to health and safety in the workplace

PC4. Identify job-site hazardous work and state possible causes of risk or accident in the workplace

Hazards include:

- Working with electrical and thermal tools and equipment
- Sharp edged and heavy tools
- Heated metals
- Oxyfuel and gas cylinders
- Welding radiation
- Surfaces: sharp, slippery, uneven, chipped, broken, etc.
- Substances: chemicals, gas, oxy-fuel, fumes, dust, etc.
- Physical: working at heights, large and heavy objects and machines, sharp and piercing objects, tools and machines, intense light, load noise, obstructions in corridors, by doors, blind turns, noise, over stacked shelves and packages, etc.
- Electrical: power supply and points, loose and naked cables and wires, electrical machines and appliances, etc.

PC5. Carry out safe working practices while dealing with hazards to ensure the safety of self and others state methods of accident prevention in the work environment of the job role

Safe working practices include:

- Using protective clothing and equipment
- Putting up and reading safety signs
- Handle tools in the correct manner and store and maintain them properly
- Keep work area clear of clutter, spillage and unsafe object lying casually
- While working with electricity take all electrical precautions like insulated clothing, adequate equipment insulation, use of control equipment, dry work area, switch off the power supply when not required, etc.
- Safe lifting and carrying practices
- Use equipment that is working properly and is well maintained
- Take due measures for safety while working in confined places, trenches or at heights, etc. Including safety harness, fall arrestors etc.

Methods are:

- Training in health and safety procedures
- Using health and safety procedures
- Use of equipment and working practices (such as safe carrying procedures)
- Safety notices, advice



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| | <ul style="list-style-type: none"> • Instruction from colleagues and supervisors <p>PC6. State location of general health and safety equipment in the workplace</p> <p>PC7. Inspect for faults, set up and safely use steps and ladders in general use</p> <p>Faults :</p> <ul style="list-style-type: none"> • Corrosion of metal components • Deterioration • Splits and cracks timber components • Imbalance • Loose rungs • Nuts or bolts, etc. <p>Set up:</p> <ul style="list-style-type: none"> • Firm/level base • Clip/lash down • Leaning at the correct angle, etc. <p>PC8. Work safely in and around trenches, elevated places and confined areas</p> <p>PC9. Lift heavy objects safely using correct procedures</p> <p>PC10. Apply good housekeeping practices at all times. Good housekeeping practices:</p> <ul style="list-style-type: none"> • Clean/tidy work areas • Removal/disposal of waste products • Protect surfaces <p>PC11. Identify common hazard signs displayed in various areas</p> <p>PC12. Retrieve and/or point out documents that refer to health and safety in the workplace</p> |
| <p>Fire safety procedures</p> | <p>The user/individual on the job should be able to:</p> <p>PC13. Use the various appropriate fire extinguishers on different types of fires correctly.</p> <p>Fire extinguishers:</p> <ul style="list-style-type: none"> • Sand • Water • Foam • Co2 • Dry powder <p>Fires:</p> <ul style="list-style-type: none"> • Class A: Ordinary solid combustibles, e.g. wood, paper, cloth, plastic, charcoal etc. • Class B: Flammable liquids and gases, e.g. gasoline, propane, diesel fuel, tar, cooking oil and similar substances • Class C: Electrical equipment e.g. appliances, wiring, breaker panels etc. (these categories of fires become Class A, B, and D fires when the electrical equipment that initiated the fire is no longer receiving electricity) • Class D: Combustible metals such as magnesium, titanium, and sodium (these fires burn at extremely high temperatures and require special suppression agents) <p>Causes of fires:</p> |



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| | <ul style="list-style-type: none"> • Heating of metal • Spontaneous ignition • Sparking, • Electrical heating • Loose fires (e.g. Smoking, welding, etc.) • Chemical fires, etc. <p>PC14. Demonstrate rescue techniques applied during fire hazard PC15. Demonstrate good housekeeping in order to prevent fire hazards PC16. Demonstrate the correct use of a fire extinguisher</p> |
| <p>Emergencies, rescue and first-aid procedures</p> | <p>The user/individual on the job should be able to:</p> <p>PC17. Demonstrate how to free a person from electrocution PC18. Administer appropriate first aid to victims as required e.g. in case of bleeding, burns, choking, electric shock, poisoning etc. PC19. Demonstrate basic techniques of bandaging PC20. Respond promptly and appropriately to an accident situation or medical emergency in real or simulated environments. few General health and safety equipment are mentioned below :</p> <ul style="list-style-type: none"> • Fire extinguishers • First aid equipment • Safety instruments and clothing • Safety installations, e.g. Fire exits, exhaust fans etc. <p>PC21. Perform and organize loss minimization or rescue activity during an accident in real or simulated environments PC22. Administer first aid to victims in case of a heart attack or cardiac arrest due to electric shock, before the arrival of emergency services in real or simulated cases PC23. Demonstrate the artificial respiration and the CPR Process PC24. Participate in emergency procedures. Emergency procedures are:</p> <ul style="list-style-type: none"> • Raising alarm • Safe/efficient evacuation • Correct means of escape • Correct assembly point • Roll call • Correct return to work <p>PC25. Complete a written accident/incident report or dictate a report to another person, and send report to person responsible Incident Report should capture:</p> <ul style="list-style-type: none"> • Name • Date/time of incident • Date/time of report, • Location • Environment conditions • Persons involved • Sequence of events • Injuries sustained • Damage sustained • Actions taken |



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| | <ul style="list-style-type: none"> • Witnesses • Supervisor/manager notified <p>Documents:</p> <ul style="list-style-type: none"> • Fire notices • Accident reports • Safety instructions for equipment and procedures • Company notices and documents • Legal documents (e.g. Government notices) <p>Job titles:</p> <ul style="list-style-type: none"> • Health and safety officer • First aid officer • Fire officer <p>PC26. Demonstrate correct method to move injured people and others during an emergency</p> |
| Element | Knowledge and Understanding |
| <p>A. Organisational Context (Knowledge of the Company/ Organisation and its processes)</p> | <p>The user/individual on the job needs to know and understand:</p> <p>KA1. State the names (and job titles if applicable), and describe where to find, all the people responsible for health and safety in a workplace</p> <p>KA2. State the names and location of documents that refer to health and safety in the workplace</p> |
| <p>B. Technical Knowledge</p> | <p>The user/individual on the job needs to know and understand:</p> <p>KB3. Meaning of “hazards” and “risks”</p> <p>KB4. Health and safety hazards commonly present in the work environment and related precautions</p> <p>KB5. Possible causes of risk, hazard or accident in the workplace and why risk and/or accidents are possible</p> <p>KB6. Activities and causes of risk and accident</p> <p>KB7. Methods of accident prevention</p> <p>KB8. Safe working practices when working with tools and machines</p> <p>KB9. Safe working practices while working at various hazardous sites</p> <p>KB10. Where to find all the general health and safety equipment in the workplace</p> <p>KB11. Various dangers associated with the use of electrical equipment</p> <p>KB12. Preventative and remedial actions to be taken in the case of exposure to toxic materials.</p> <ul style="list-style-type: none"> • Exposure: ingested, contact with skin, inhaled • Preventative action: ventilation, masks, protective clothing/equipment • Remedial action: immediate first aid, report to supervisor • Materials: solvents, flux, lead <p>KB13. Importance of using protective clothing/equipment while working</p> <p>KB14. Precautionary activities to prevent the fire accident</p> <p>Activities and causes:</p> <ul style="list-style-type: none"> • Physical actions • Reading |



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| | <ul style="list-style-type: none"> • Listening to and giving instructions • Inattention • Sickness and incapacity (e.g. Drunkenness) • Health hazards (e.g. Untreated injuries and contagious illness) <p>KB15. Various causes of fire KB16. Techniques of using the different fire extinguishers KB17. Different methods of extinguishing fire KB18. Rescue techniques applied during a fire hazard KB19. Various types of safety signs and what they mean KB20. Appropriate basic first aid treatment relevant to the condition e.g. Shock, electrical shock, bleeding, breaks to bones, minor burns, resuscitation, poisoning, eye injuries KB21. Content of written accident report KB22. Potential injuries and ill health associated with incorrect manual handling KB23. Safe lifting and carrying practices KB24. Personal safety, health and dignity issues relating to the movement of a person by others KB25. Potential impact to a person who is moved incorrectly</p> |
| Skills (S) w.r.t. the scope | |
| Element | Skills |
| A. Core Skills/ Generic Skills | Reading and Writing Skills |
| | The user/individual on the job needs to know and understand how to: SA1. Read and comprehend basic content to read labels, charts, signage's SA2. Read and comprehend basic English to read manuals of operations SA3. Read and write an accident/incident report in local language or English |
| | Oral Communication (Listening and Speaking skills) |
| | The user/individual on the job needs to know and understand how to: SA4. Question co-workers appropriately in order to clarify instructions and other issues SA5. Give clear instructions to co-workers, subordinates others |
| B. Professional Skills | Decision Making |
| | The user/individual on the job needs to know and understand how to: SA6. Make appropriate decisions pertaining to the concerned area of work with respect to intended work objective, span of authority, responsibility, laid down procedure and guidelines |
| B. Professional Skills | Plan and Organize |
| | The user/individual on the job needs to know and understand: SB1. Plan and organize their own work schedule, work area, tools, equipment and materials to maintain decorum and for improved productivity |

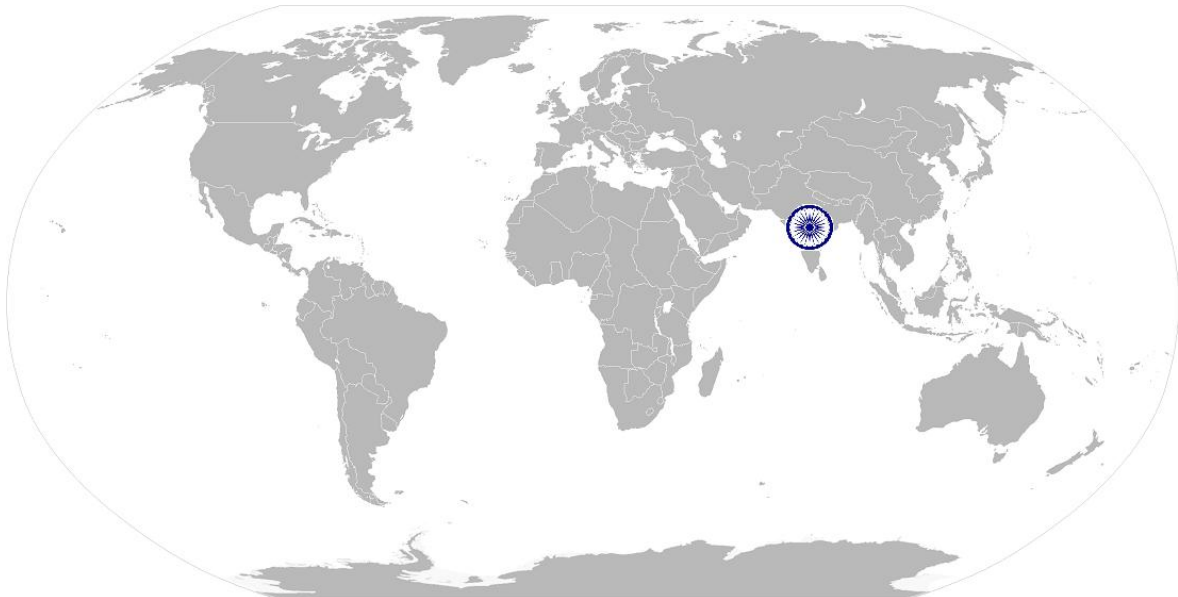


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| | Working with others |
| | <p>The user/individual on the job needs to know and understand how to:</p> <p>SB2. Remain congenial while discussing and debating issues with co-workers SB3. Follow appropriate protocols for communication based on situation, hierarchy, organizational culture and practice SB4. Ask for, provide and receive required assistance where possible to ensure achievement of work related objectives SB5. Thank co-workers for any assistance received SB6. Offer appropriate respect based on mutuality and respect for fellow workmanship and authority</p> |
| | Problem Solving |
| | <p>The user/individual on the job needs to know and understand how to:</p> <p>SB7. Think through the problem, evaluate the possible solution(s) and suggest an optimum /best possible solution(s) SB8. Identify immediate or temporary solutions to resolve delays SB9. Identify sources of support that can be availed of for problem solving for various kind of problems SB10. Seek appropriate assistance from other sources to resolve problems SB11. Report problems that you cannot resolve to appropriate authority</p> |
| | Analytical Thinking |
| | <p>The user/individual on the job needs to know and understand how to:</p> <p>SB12. Identify cause and effect relations in their area of work SB13. Use cause and effect relations to anticipate potential problems and their solution</p> |



NOS Version Control

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| NOS Code | ISC/N0008 | | |
| Credits(NSQF) | TBD | Version number | 1.0 |
| Industry | Iron and steel | Drafted on | 23/07/2014 |
| Industry Sub-sector | All departments | Last reviewed on | 30/12/2014 |
| Occupation | Maintenance | Next review date | 30/12/2015 |





ISC/N0009: Work effectively with others

National Occupational Standards



Overview

This unit covers basic practices that improve effectiveness of working with others in an organisational set-up.



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| Unit Code | ISC/N0009 |
| Unit Title (Task) | Work effectively with others |
| Description | This unit covers basic etiquette and competencies that a candidate is required to possess and demonstrate in their behaviour and interactions with others at the workplace. |
| Scope | This unit/task covers the following: <ul style="list-style-type: none"> • Ensure appropriate communication with superiors, peers and others as applicable at work place • Demonstrate appropriate behaviour and etiquette at work place |
| Performance Criteria (PC) w.r.t. the Scope | |
| Element | Performance Criteria |
| Ensure appropriate communication with superiors, peers and others as applicable at work place | The user/individual on the job should be able to: <p>PC1. Accurately receive information and instructions from the supervisor and fellow workers, getting clarification where required</p> <p>PC2. Accurately pass on information to authorized persons who require it and within agreed timescale and confirm its receipt</p> <p>PC3. Provide information to others clearly, at a pace and in a manner that helps them to understand</p> |
| Demonstrate appropriate behaviour and etiquette at work place | The user/individual on the job should be able to: <p>PC4. Display helpful behaviour by assisting others in performing tasks in a positive manner, where required and possible</p> <p>PC5. Consult with and assist others to maximize effectiveness and efficiency in carrying out tasks</p> <p>PC6. Display appropriate communication etiquette while working</p> <p>PC7. Display active listening skills while interacting with others at work</p> <p>PC8. Use appropriate tone, pitch and language to convey politeness, assertiveness, care and professionalism</p> <p>PC9. Demonstrate responsible and disciplined behaviours at the workplace</p> <p>PC10. Escalate grievances and problems to</p> |
| Element | Knowledge and Understanding |
| A. Organisational Context (Knowledge of the Company/ Organisation and | The user/individual on the job needs to know and understand: <p>KA1. Legislation, standards, policies, and procedures followed in the company relevant to own employment and performance conditions</p> <p>KA2. Reporting structure, inter-dependent functions, lines and procedures in the work area</p> <p>KA3. Relevant people and their responsibilities within the work area</p> |



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| its processes) | KA4. Escalation matrix and procedures for reporting work and employment related issues |
| B. Technical Knowledge | <p>The user/individual on the job needs to know and understand:</p> <p>KB1. Various categories of people that one is required to communicate and co-ordinate with in the organization</p> <p>KB2. Importance of effective communication in the workplace</p> <p>KB3. Importance of teamwork in organizational and individual success</p> <p>KB4. Various components of effective communication</p> <p>KB5. Key elements of active listening</p> <p>KB6. Value and importance of active listening and assertive communication</p> <p>KB7. Barriers to effective communication</p> <p>KB8. Importance of tone and pitch in effective communication</p> <p>KB9. Importance of avoiding casual expletives and unpleasant terms while communicating professional circles</p> <p>KB10. How poor communication practices can disturb people, environment and cause problems for the employee, the employer and the customer</p> <p>KB11. Importance of ethics for professional success</p> <p>KB12. Importance of discipline for professional success</p> <p>KB13. What constitutes disciplined behaviour for a working professional</p> <p>KB14. Common reasons for interpersonal conflict</p> <p>KB15. Importance of developing effective working relationships for professional success</p> <p>KB16. Expressing and addressing grievances appropriately and effectively</p> <p>KB17. Importance and ways of managing interpersonal conflict effectively</p> |
| Skills (S) w.r.t. the scope | |
| Element | Skills |
| A. Core Skills/ Generic Skills | Reading and Writing Skills |
| | The user/individual on the job needs to know and understand how to: |
| | SA1. Read and comprehend basic content to read labels, charts, signage's SA2. Read and comprehend basic English to read manuals of operations SA3. Read and write an accident/incident report in local language or English |
| | Oral Communication (Listening and Speaking skills) |
| | The user/individual on the job needs to know and understand how to: |
| | SA4. Question co-workers appropriately in order to clarify instructions and other issues SA5. Provide clear instructions to co-workers, subordinates others |
| | Decision Making |
| | The user/individual on the job needs to know and understand how to: |



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| | SA6. Make appropriate decisions pertaining to the concerned area of work with respect to intended work objective, span of authority, responsibility, laid down procedure and guidelines |
| B. Professional Skills | Plan and Organize |
| | The user/individual on the job needs to know and understand: |
| | SB1. Plan and organize their own work schedule, work area, tools, equipment and materials to maintain decorum and for improved productivity |
| | Working with others |
| | The user/individual on the job needs to know and understand how to: |
| | SB2. Remain congenial while discussing and debating issues with co-workers SB3. Follow appropriate protocols for communication based on situation, hierarchy, organizational culture and practice SB4. Ask for, provide and receive required assistance where possible to ensure achievement of work related objectives SB5. Thank co-workers for any assistance received SB6. Offer appropriate respect based on mutuality and respect for fellow workmanship and authority |
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| SB7. Think through the problem, evaluate the possible solution(s) and suggest an optimum /best possible solution(s) SB8. Identify immediate or temporary solutions to resolve delays SB9. Identify sources of support that can be availed of for problem solving for various kind of problems SB10. Seek appropriate assistance from other sources to resolve problems SB11. Report problems that you cannot resolve to appropriate authority | |
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| The user/individual on the job needs to know and understand how to: | |
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| Industry | Iron and steel | Drafted on | 23/07/2014 |
| Industry Sub-sector | All departments | Last reviewed on | 30/12/2014 |
| Occupation | Maintenance | Next review date | 30/12/2015 |

