Indian Iron & Steel Sector Skill Council

QUALIFICATIONS PACK - OCCUPATIONAL STANDARDS FOR IRON & STEEL INDUSTRY

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

Contents

Introduction

Qualifications Pack – Laboratory Technician Physical

SECTOR: Iron & Steel

SUB-SECTOR: Steel

REFERENCE ID: ISC/Q0801

ALIGNED TO: NCO-2004/NIL

Title of Job: The job is about preparation of steel samples, testing them for different physical properties against national/international standards, appropriately recording them and reporting them to the concerned department of the steel plant in order to ensure consistent product quality.

Personal Attributes: This job requires the candidate to work independently as well as in teams. Some of the key attributes include physical fitness, not having colour blindness, having analytical skills, problem solving attitude, high concentration levels, sharp reflex and willingness to work in a factory environment.

Job Details

Qualifications Pack Code	ISC/Q0801		
Job Role	Laboratory Technician Physical		
Credits(NSQF)	TBD	Version number	1.0
Industry	Iron & Steel	Drafted on	21/11/2014
Sub-sector	Steel	Last reviewed on	25/03/2015
Occupation	Product Quality Control	Next review date	25/03/2016

Job Role	Laboratory Technician Physical
Role Description	The job is about preparation of steel samples, testing them for different physical properties against national/international standards, appropriately recording them and reporting them to the concerned department of the steel plant in order to ensure consistent product quality.
NSQF level	3
Minimum Educational Qualifications	B.Sc (with Physics as a subject) Pass / Dip.in Engineering (Mechanical/Electrical) Pass
Maximum Educational Qualifications	B.E, or B. Tech Pass
Training (Suggested but not mandatory)	• Hands on training in the physical testing laboratory for 3 months consisting of 1month theory +2 months practical • Technical implications of the tests and their impact on product/process • Basic computer operations • Job specific safety training (to be included in the Hands On training of 3 months)
Experience	• 6 -12 months -experience under an experienced laboratory technician • If the candidate has 6-12 months of hands on experience, the minimum qualification can be waived at the discretion of the employer
Occupational Standards (OS)	Compulsory: ISC/N0803: Prepare the test sample, conduct physical tests and upload the results in logbook/system ISC/N0804: Preserve and/or dispose-off the samples after

	physical test and calibrate the equipment at scheduled frequency ISC/N0008: Use basic health and safety practices at workplace ISC/N0009: Work effectively with others Optional: N/A
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.

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.

Acronyms

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

ISC/N0803: Prepare the test sample, conduct physical tests and upload the results in logbook/system

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Overview

This unit is about preparing steel samples for testing of physical properties.

National Occupational Standard

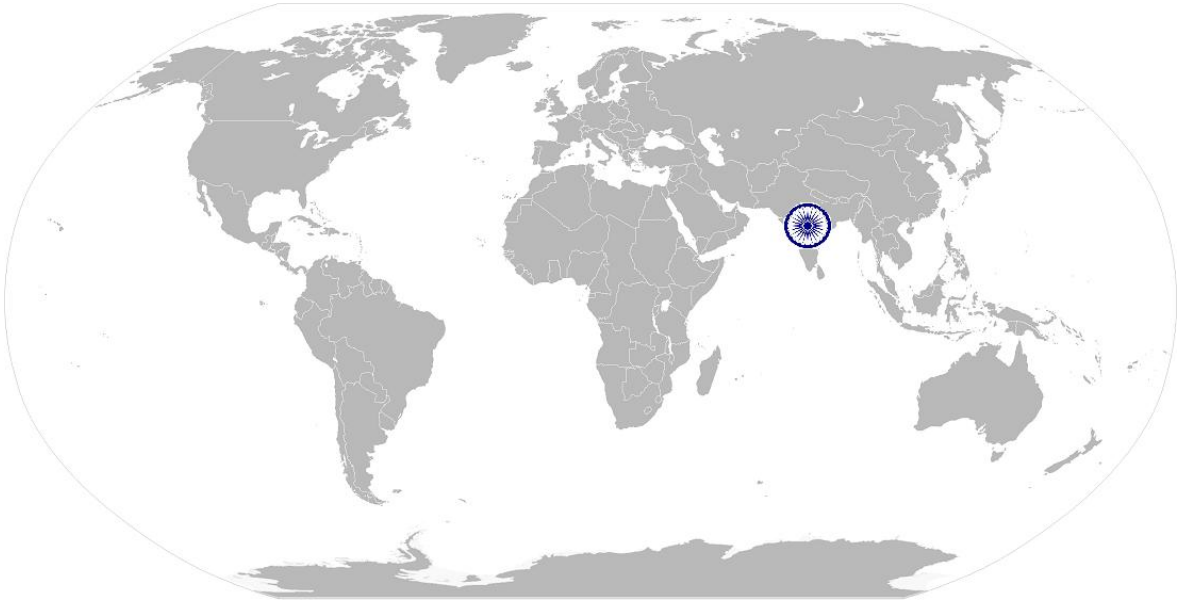
Unit Code	ISC/N0803
Unit Title (Task)	Prepare the test sample, conduct physical tests and upload the results in logbook/system
Description	This unit is about preparing samples for testing of physical properties in laboratory.
Scope	This OS unit/task covers the following: • Prepare steel samples for testing various physical properties of steel • Conduct tests on the prepared samples according to the relevant SPI • Upload the results into logbook and/or system through computer

Performance Criteria (PC) w.r.t. the Scope	
Element	Performance Criteria
Prepare test samples for testing various physical properties of steel	To be competent, the user/individual on the job must be able to: PC1. Understand the different testing procedure & relevant standards based on nature of the physical tests that need to be carried out PC2. Cut the sample to the required profile using the right tools e.g. Knives, metalworking and multipurpose drill bits, broaches, countersinks, cutting burrs, cutting tool holders, debarring cutters, hole saws. Industrial drill bits, slotting cutter, blades etc.
Conduct tests on the prepared samples according to the relevant SPI	To be competent, the user/individual on the job must be able to: PC3. Operate the relevant equipments (Universal Testing Machine, Microscopes, Impact tester, V-notch testing machine, Ultra-sound testing equipment, Hardness testing machine, Bend-testing machine, Electric oven Grinder, Hand Shear, Milling machine, Profile cutter etc.) and conduct the test as per SPI PC4. Ensure to carry out following tests as required: • Hardness • Property tests (YS, UTS, El%, r-bar etc.) • Bend test • Roughness of surface • Coating thickness measurement • Drawability test • Cupping test • Basic micro-structure • Inclusion rating
Upload the results into logbook and/or system through computer	To be competent, the user/individual on the job must be able to: PC5. Record the results into logbook and/or the system through computer PC6. Share the test result with the respective departments with observations

Element	Knowledge and Understanding
A. Organisational Context (Knowledge of the Company/ Organisation and its processes)	The user/individual on the job needs to know and understand: KA1. Job specific documents KA2. Quality and damage checks to be done and importance of the same KA3. Safety policy of the company, especially related to the samples KA4. Emergency plan of the specific work site KA5. Risk and impact of not following defined procedures/work instructions KA6. Escalation matrix for reporting identified issues
B. Technical Knowledge	The user/individual on the job needs to know and understand: KB1. The relevant safety standard and the concerned SPI for sample preparation KB2: The operation of the machines, equipments, tools and tackles used in sample preparation KB3. Technical implications of the tests and their impact on product/process KB4. General range of expected values and the benchmark figures for each test in order to validate the results KB5. How to clean, lubricate, attend to basic maintenance requirements of the machines he has to handle KB6. How to handle basic computer operations KB7. How to identify basic micro-structures KB8. How to read the equipment manuals and process documents given by the equipment supplier to understand the equipment and processes better KB9. How to read, understand, follow memos, reports, instruction manuals, quality control charts and safety documents

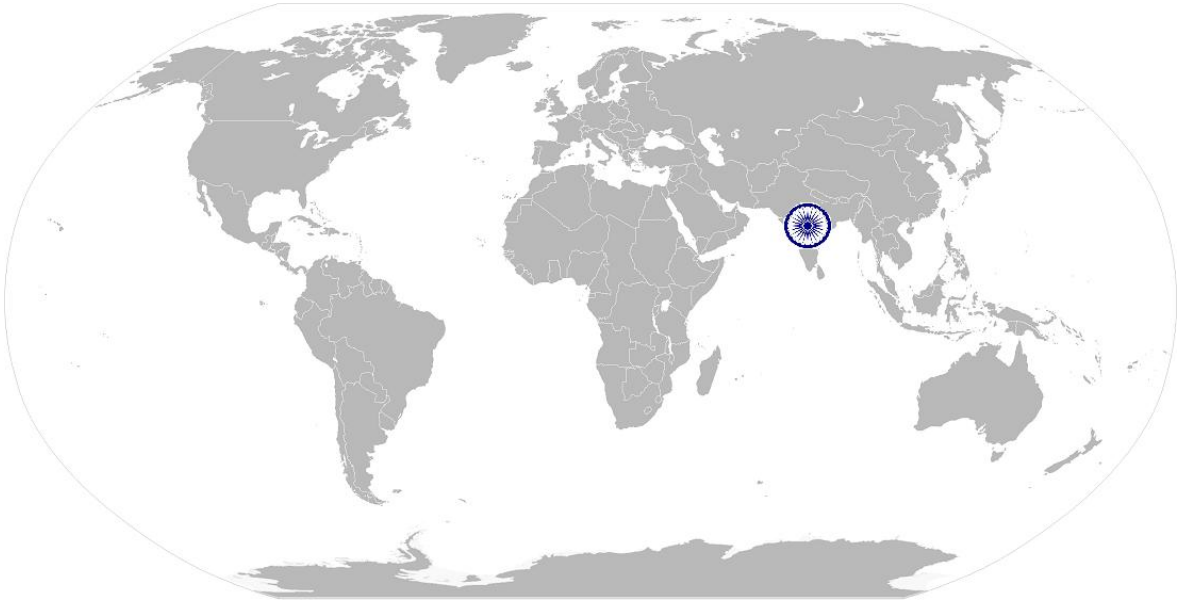
Skills (S) w.r.t. the scope	
Element	Skills
A. Core Skills/ Generic Skills	Writing Skills
	The user/ individual on the job needs to know and understand how to: SA1. Construct simple sentences and express ideas clearly through written communication SA2. Fill up appropriate technical forms, process charts, 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 the test procedures and the relevant standards. 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 & Problem Solving
	The user/individual on the job needs to know and understand how to: SB1. Diagnose common problems in various physical testing procedures by visual inspection, temperature, equipment readings etc. SB2. Suggest improvements(if any) in maintenance processes based on experience



NOS Version Control

NOS Code	ISC/N0803		
Credits(NSQF)	TBD	Version number	1.0
Industry	Iron and Steel	Drafted on	21/11/2014
Industry Sub-sector	Steel	Last reviewed on	25/03/2015
Occupation	Product Quality Control	Next review date	25/03/2016



ISC/N0804: Preserve and/or dispose-off the samples after physical test and calibrate the equipment at scheduled frequency

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National Occupational Standards

Overview

This unit is about preserving and/or disposing off the used samples after the chemical tests and calibrate the testing equipment at scheduled frequency.

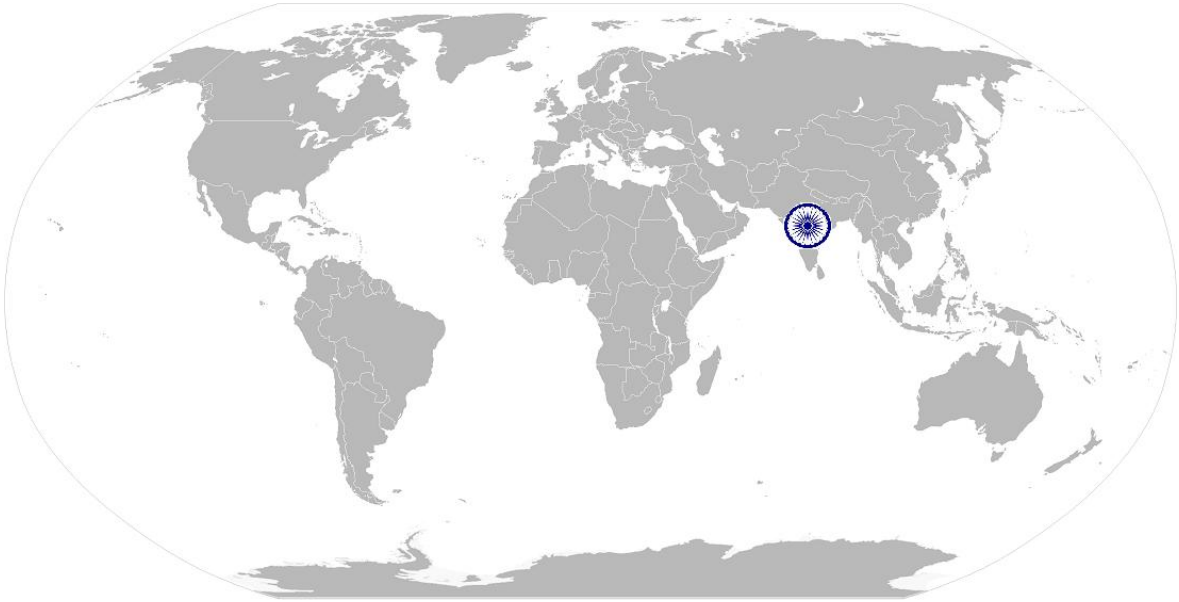
National Occupational Standard

Unit Code	ISC/N0804
Unit Title (Task)	Preserve and/or dispose-off the samples after physical test and calibrate the equipment at scheduled frequency
Description	This unit is about preserving and/or disposing off the used samples after the chemical tests and calibrate the testing equipments at scheduled frequency.
Scope	This OS unit/task covers the following: • Collect used samples from the equipment and either preserve them for the scheduled period, or dispose them following the SOP • Periodically calibrate the equipment in the physical laboratory at a defined frequency following the supplier's manual and also the SPI for the same

Performance Criteria (PC) w.r.t. the Scope	
Element	**Performance Criteria**
Collect used samples from the equipment and either preserving them for the scheduled period, or dispose them following the SOP	To be competent, the user/individual on the job must be able to: PC1. Segregate the preserving and disposing testing materials post conducting the tests as per requirement PC2. Follow the set standards (in SOP) to preserved the samples with necessary tagging in designated places PC3. Discard the samples in the bins identified for rejected metallic samples PC4. Take necessary precautions for disposing the testing materials as per nature and characteristics for safe disposal
Periodically calibrate the equipment in the physical laboratory at a defined frequency following the supplier's manual and also the SPI for the same	To be competent, the user/individual on the job must be able to: PC5. Understand and follow the steps outlined in the SOP for each equipment that needs manual calibration (excluding those which are auto-calibrated) PC6. Understand the calibration methods of each testing equipment as captured in the equipment manual PC7. Ensure the calibration of the testing equipment as per set frequency, either internally or through a 3rd party involvement. PC8. Inform the appropriate senior authority in case of equipment damage or abnormal calibration results PC9. Coordinate with the concerned departments for repairing/replacement of faulty testing equipments
Element	**Knowledge and Understanding**
A. Organisational Context (Knowledge of the Company/ Organisation and	The user/individual on the job needs to know and understand: KA1. Job specific documents KA2. Quality and damage checks to be done and importance of the same KA3. Safety policy of the company, especially related to the samples KA4. Emergency plan of the specific work site

its processes)	KA5. Risk and impact of not following defined procedures/work instructions KA6. Escalation matrix for reporting identified issues
B. Technical Knowledge	The user/individual on the job needs to know and understand: KB1. The relevant safety standard and the concerned SPI for sample preparation KB2: The operation of the machines, tools and tackles used in sample preparation KB3. Technical implications of the tests and their impact on product/process KB4. General range of expected values and the benchmark figures for each test in order to validate the results KB5. Qualitatively assessing relevant parameters (like degree of white rust on coated samples) KB6.Capable of handling basic computer operations KB7. Capable of identifying basic micro-structures KB8. The nature of the samples before and after use and the associated hazards of not following the instructions KB9. The importance of preservation of samples for further referrals and also the right way of preservation to prevent degradation KB10. The process of calibration and its importance in case of each equipment KB11. The concept of repeatability, reproducibility, uncertainty value etc. KB12. How to read the equipment manuals and process documents given by the equipment supplier to understand the equipment and processes better KB13. How to read, understand, follow memos, reports, instruction manuals, quality control charts and safety documents
Skills (S) w.r.t. the scope	
Element	Skills
A. Core Skills/ Generic Skills	Writing Skills
	The user/ individual on the job needs to know and understand how to: 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 relevant engineering standards. 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 & Problem Solving
	The user/individual on the job needs to know and understand how to: SB1. Diagnose common problems in various physical testing procedures by visual inspection, temperature, equipment readings etc. SB2. Suggest improvements(if any) in maintenance processes based on experience



NOS Version Control

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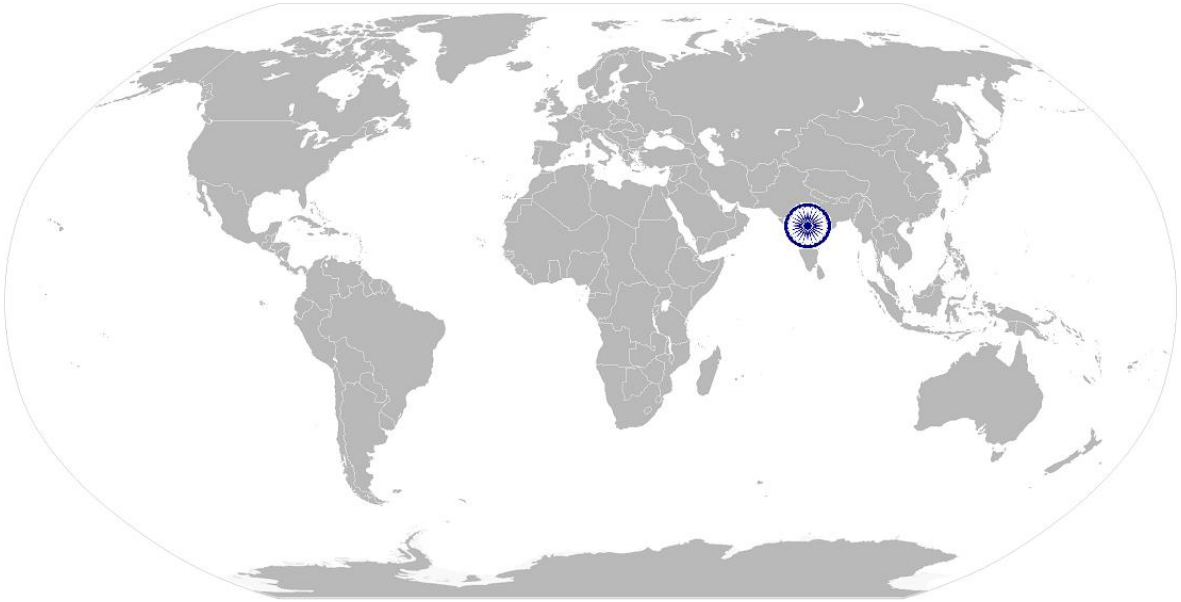
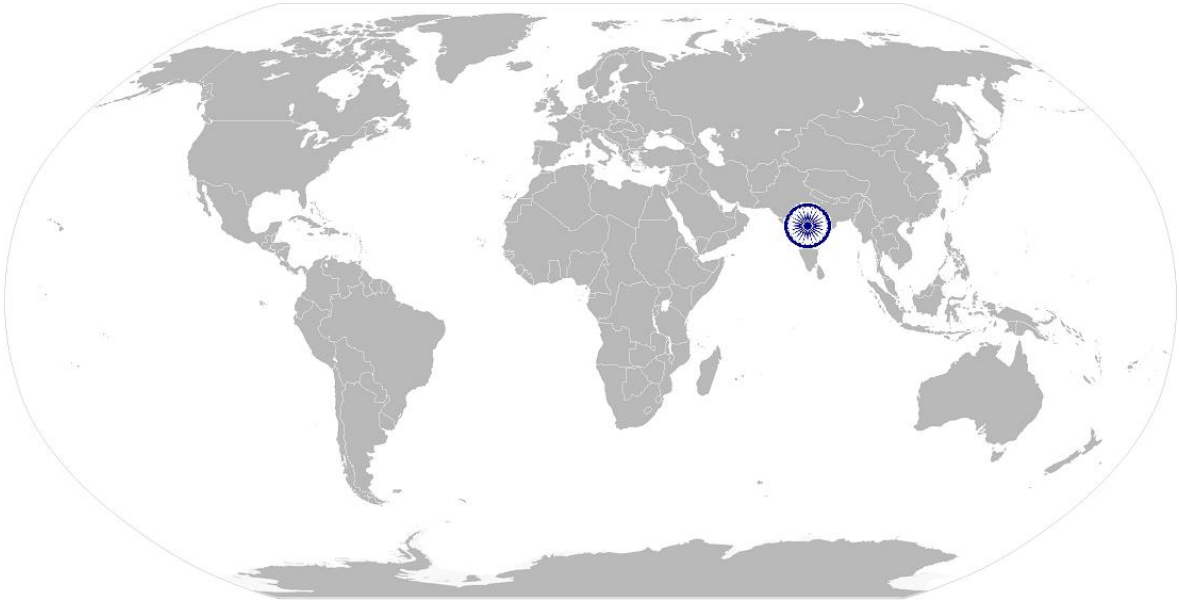
Industry	Iron and Steel	Drafted on	21/11/2014
Industry Sub-sector	Steel	Last reviewed on	25/03/2015
Occupation	Product Quality Control	Next review date	25/03/2016



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.

National Occupational Standard

Unit Code	ISC/N0008
Unit Title (Task)	Use basic health and safety practices at the work place
Description	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. It includes understanding of risks and hazards in the workplace, along with common techniques to minimize risk, deal with accidents, emergencies, etc.
Scope	This unit/task covers the following: • 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	The user/individual on the job should be able to: PC1. Use protective clothing/equipment for specific tasks and work conditions Protective clothing includes: • 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 Equipment includes: • Hand shields • Machine guards • Residual current devices • Shields • Dust sheets • Respirator PC2. State the name and location of people responsible for health and safety in the 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, tolls 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
- Instruction from colleagues and supervisors

PC6. State location of general health and safety equipment in the workplace

PC7. Inspect for faults, set up and safely use steps and ladders in general use

Faults :

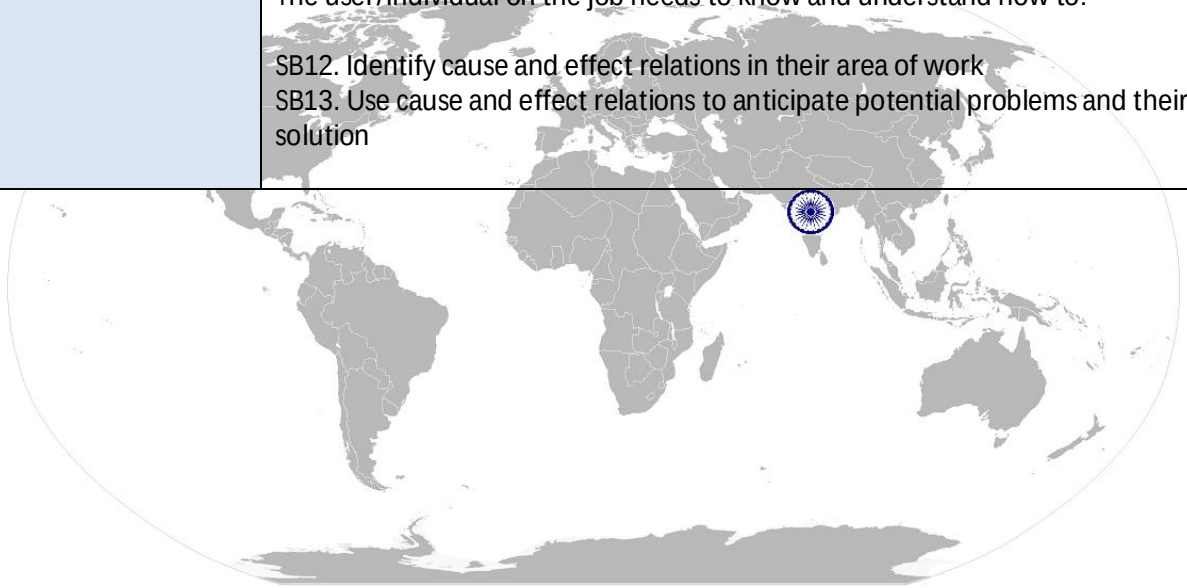
	• Corrosion of metal components • Deterioration • Splits and cracks timber components • Imbalance • Loose rungs • Nuts or bolts, etc. Set up: • Firm/level base • Clip/lash down • Leaning at the correct angle, etc. PC8. Work safely in and around trenches, elevated places and confined areas PC9. Lift heavy objects safely using correct procedures PC10. Apply good housekeeping practices at all times. Good housekeeping practices: • Clean/tidy work areas • Removal/disposal of waste products • Protect surfaces PC11. Identify common hazard signs displayed in various areas PC12. Retrieve and/or point out documents that refer to health and safety in the workplace
Fire safety procedures	The user/individual on the job should be able to: PC13. Use the various appropriate fire extinguishers on different types of fires correctly. Fire extinguishers: • Sand • Water • Foam • Co2 • Dry powder Fires: • 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) Causes of fires: • Heating of metal • Spontaneous ignition • Sparking, • Electrical heating • Loose fires (e.g. Smoking, welding, etc.) • Chemical fires, etc.

	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
Emergencies, rescue and first-aid procedures	The user/individual on the job should be able to: 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 : • Fire extinguishers • First aid equipment • Safety instruments and clothing • Safety installations, e.g. Fire exits, exhaust fans etc. 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: • Raising alarm • Safe/efficient evacuation • Correct means of escape • Correct assembly point • Roll call • Correct return to work PC25. Complete a written accident/incident report or dictate a report to another person, and send report to person responsible Incident Report should capture: • Name • Date/time of incident • Date/time of report, • Location • Environment conditions • Persons involved • Sequence of events • Injuries sustained • Damage sustained • Actions taken • Witnesses • Supervisor/manager notified Documents: • Fire notices • Accident reports • Safety instructions for equipment and procedures • Company notices and documents

	• Legal documents (e.g. Government notices) Job titles: • Health and safety officer • First aid officer • Fire officer PC26. Demonstrate correct method to move injured people and others during an emergency
Element	**Knowledge and Understanding**
A. Organisational Context (Knowledge of the Company/ Organisation and its processes)	The user/individual on the job needs to know and understand: 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 KA2. State the names and location of documents that refer to health and safety in the workplace
B. Technical Knowledge	The user/individual on the job needs to know and understand: KB3. Meaning of "hazards" and "risks" KB4. Health and safety hazards commonly present in the work environment and related precautions KB5. Possible causes of risk, hazard or accident in the workplace and why risk and/or accidents are possible KB6. Activities and causes of risk and accident KB7. Methods of accident prevention KB8. Safe working practices when working with tools and machines KB9. Safe working practices while working at various hazardous sites KB10. Where to find all the general health and safety equipment in the workplace KB11. Various dangers associated with the use of electrical equipment KB12. Preventative and remedial actions to be taken in the case of exposure to toxic materials. • 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 KB13. Importance of using protective clothing/equipment while working KB14. Precautionary activities to prevent the fire accident Activities and causes: • Physical actions • Reading • Listening to and giving instructions • Inattention • Sickness and incapacity (e.g. Drunkenness) • Health hazards (e.g. Untreated injuries and contagious illness) 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

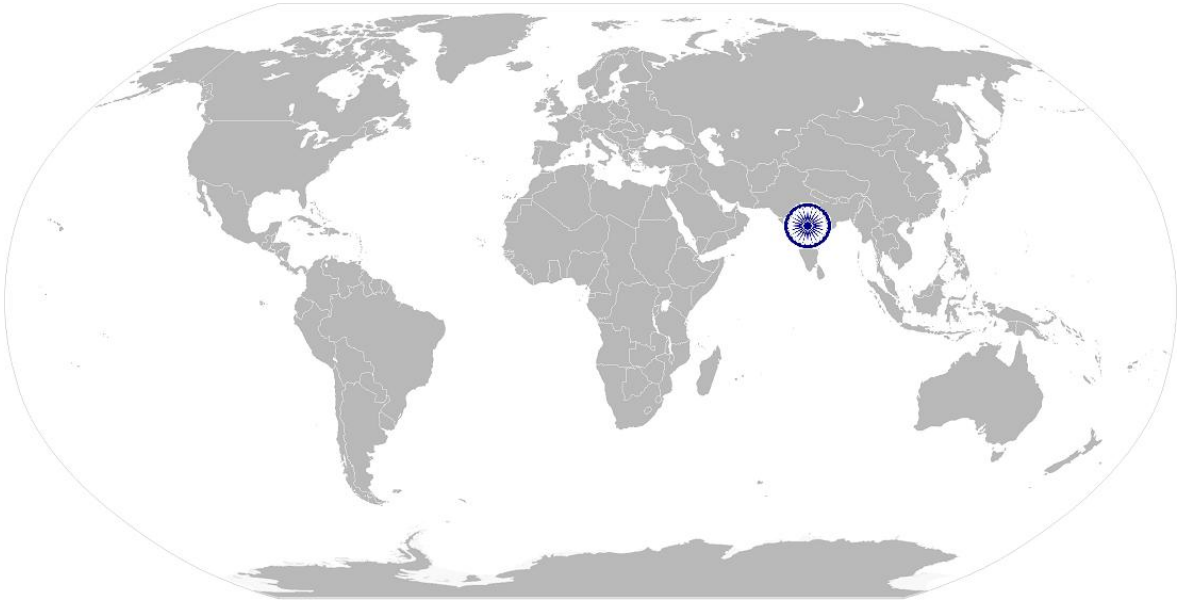
	KB19. Various types of safety signs and what they mean KB20. Appropriate basic first aid treatment relevant to the condition e.g. Shock, electrical shock, bleeding, breaks to bones, minor burns, resuscitation, poisoning, eye injuries KB21. Content of written accident report KB22. Potential injuries and ill health associated with incorrect manual handing 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
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
	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
	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
	Problem Solving
	The user/individual on the job needs to know and understand how to: 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
	Analytical Thinking
	The user/individual on the job needs to know and understand how to: SB12. Identify cause and effect relations in their area of work SB13. Use cause and effect relations to anticipate potential problems and their solution



NOS Version Control

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	Product Quality Control	Next review date	30/12/2015



National Occupational Standards

Overview

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

National Occupational Standard

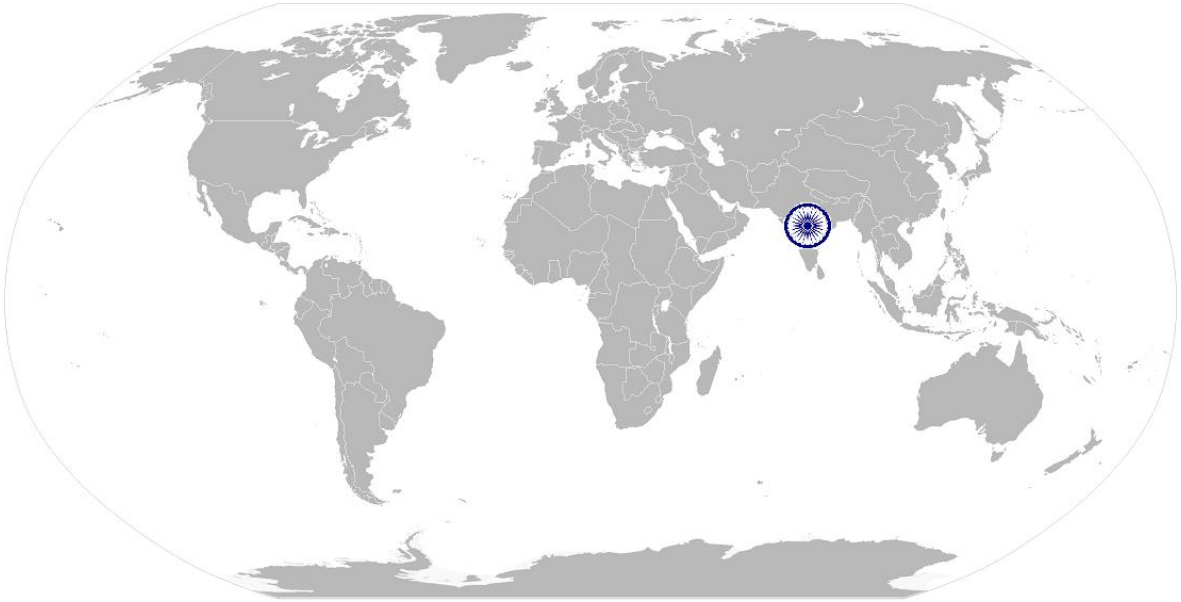
Unit Code	ISC/N0009
Unit Title (Task)	Work effectively with others
Description	This unit covers basic etiquette and competencies that a candidate is required to possess and demonstrate in their behaviour and interactions with others at the workplace.
Scope	This unit/task covers the following: • Ensure 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: PC1. Accurately receive information and instructions from the supervisor and fellow workers, getting clarification where required PC2. Accurately pass on information to authorized persons who require it and within agreed timescale and confirm its receipt PC3. Provide information to others clearly, at a pace and in a manner that helps them to understand
Demonstrate appropriate behaviour and etiquette at work place	The user/individual on the job should be able to: PC4. Display helpful behaviour by assisting others in performing tasks in a positive manner, where required and possible PC5. Consult with and assist others to maximize effectiveness and efficiency in carrying out tasks PC6. Display appropriate communication etiquette while working PC7. Display active listening skills while interacting with others at work PC8. Use appropriate tone, pitch and language to convey politeness, assertiveness, care and professionalism PC9. Demonstrate responsible and disciplined behaviours at the workplace PC10. Escalate grievances and problems to
Element	**Knowledge and Understanding**
A. Organisational Context (Knowledge of the Company/ Organisation and its processes)	The user/individual on the job needs to know and understand: KA1. Legislation, standards, policies, and procedures followed in the company relevant to own employment and performance conditions KA2. Reporting structure, inter-dependent functions, lines and procedures in the work area KA3. Relevant people and their responsibilities within the work area KA4. Escalation matrix and procedures for reporting work and employment related issues

B. Technical Knowledge	The user/individual on the job needs to know and understand: KB1. Various categories of people that one is required to communicate and co-ordinate with in the organization KB2. Importance of effective communication in the workplace KB3. Importance of teamwork in organizational and individual success KB4. Various components of effective communication KB5. Key elements of active listening KB6. Value and importance of active listening and assertive communication KB7. Barriers to effective communication KB8. Importance of tone and pitch in effective communication KB9. Importance of avoiding casual expletives and unpleasant terms while communicating professional circles KB10. How poor communication practices can disturb people, environment and cause problems for the employee, the employer and the customer KB11. Importance of ethics for professional success KB12. Importance of discipline for professional success KB13. What constitutes disciplined behaviour for a working professional KB14. Common reasons for interpersonal conflict KB15. Importance of developing effective working relationships for professional success KB16. Expressing and addressing grievances appropriately and effectively KB17. Importance and ways of managing interpersonal conflict effectively
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: 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
	Problem Solving
	The user/individual on the job needs to know and understand how to: 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
	Analytical Thinking
	The user/individual on the job needs to know and understand how to: SB12. Identify cause and effect relations in their area of work SB13. Use cause and effect relations to anticipate potential problems and their solution

NOS Version Control

NOS Code	ISC/N0009		
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	Product Quality Control	Next review date	30/12/2015



CRITERIA FOR ASSESSMENT OF TRAINEES

Job Role: Laboratory Technician Physical
Qualification Pack: ISC/Q0801
Sector Skill Council: Indian Iron & Steel Sector Skill Council

Guidelines for Assessment:

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (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 center (as per assessment criteria below)
4. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training center based on this criteria.
5. To pass the Qualification Pack , every trainee should score a minimum of 60% in every NOS.
6. In case of successfully passing only certain number of NOS's, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack.

				Marks Allocated	
NOSs	PCs	Total Marks 1000	Out Of	Theory	Practical
ISC/N0803: Prepare the test sample, conduct physical tests and upload the results in logbook/system	PC1. Understand the different testing procedure & relevant standards based on nature of the physical tests that need to be carried out	550	20	20	0
	PC2. Cut the sample to the required profile using the right tools e.g. Knives, metalworking and multipurpose drill bits, broaches, countersinks, cutting burrs, cutting tool holders, debarring cutters, hole saws. Industrial drill bits, slotting cutter, blades etc.		100	10	90

	PC3. Operate the relevant equipments (Universal Testing Machine, Microscopes, Impact tester, V-notch testing machine, Ultra-sound testing equipment, Hardness testing machine, Bend-testing machine, Electric oven Grinder, Hand Shear, Milling machine, Profile cutter etc.) and conduct the test as per SPI		150	20	130
	PC4. Ensure to carry out following tests as required: • Hardness • Property tests (YS, UTS, El%, r-bar etc.) • Bend test • Roughness of surface • Coating thickness measurement • Drawability test • Cupping test • Micro-structure • Inclusion rating		250	50	200
	PC5. Record the results into logbook and/or the system through computer		20	0	20
	PC6. Share the test result with the respective departments with observations		10	0	10
		Total	550	100	450
ISC/N0804: Preserve and/or dispose-off the samples after physical test and calibrate the equipment at scheduled frequency	PC1. Segregate the preserving and disposing testing materials post conducting the tests as per requirement	200	10	0	10
	PC2. Follow the set standards (in SOP) to preserved the samples with necessary tagging in designated places		30	10	20
	PC3. Discard the samples in the bins identified for rejected metallic samples		10	0	10
	PC4. Take necessary precautions for disposing the testing materials as per nature and characteristics for safe disposal		20	0	20
	PC5. Understand and follow the steps outlined in the SOP for each equipment that needs manual calibration (excluding those which are auto-calibrated)		40	10	30

	PC6. Understand the calibration methods of each testing equipments as captured in the equipment manual		40	10	30
	PC7. Ensure the calibration of the testing equipments as per set frequency		30	0	30
	PC8. Inform the reporting senior in case of equipment damaged or abnormal calibration test record		10	0	10
	PC9. Coordinate with the concerned departments for repairing/replacement of faulty testing equipments		10	0	10
		Total	200	30	170
ISC/N0008: Use basic health and safety practices at the workplace	PC1. Use protective clothing/equipment for specific tasks and work conditions	150	10	5	5
	PC2. State the name and location of people responsible for health and safety in the workplace		5	0	5
	PC3. State the names and location of documents that refer to health and safety in the workplace		0	0	0
	PC4. Identify job-site hazardous work and state possible causes of risk or accident in the workplace		10	5	5
	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		10	5	5
	PC6. State location of general health and safety equipment in the workplace		5	0	5
	PC7. Inspect for faults, set up and safely use steps and ladders in general use		5	0	5
	PC8. Work safely in and around trenches, elevated places and confined areas		5	0	5
	PC9. Lift heavy objects safely using correct procedures		5	0	5
	PC10. Apply good housekeeping practices at all times		0	0	0
	PC11. Identify common hazard signs displayed in various areas		5	5	0
	PC12. Retrieve and/or point out documents that refer to health and safety in the workplace		5	0	5

	PC13. Use the various appropriate fire extinguishers on different types of fires correctly		10	5	5
	PC14. Demonstrate rescue techniques applied during fire hazard		10	5	5
	PC15. Demonstrate good housekeeping in order to prevent fire hazards		0	0	0
	PC16. Demonstrate the correct use of a fire extinguisher		5	0	5
	PC17. Demonstrate how to free a person from electrocution		5	0	5
	PC18. Administer appropriate first aid to victims as required e.g. in case of bleeding, burns, choking, electric shock, poisoning etc.		10	5	5
	PC19. Demonstrate basic techniques of bandaging		5	0	5
	PC20. Respond promptly and appropriately to an accident situation or medical emergency in real or simulated environments		10	5	5
	PC21. Perform and organize loss minimization or rescue activity during an accident in real or simulated environments		5	0	5
	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		5	0	5
	PC23. Demonstrate the artificial respiration and the CPR Process		5	0	5
	PC24. Participate in emergency procedures		5	0	5
	PC25. Complete a written accident/incident report or dictate a report to another person, and send report to person responsible		10	5	5
	PC26. Demonstrate correct method to move injured people and others during an emergency		0	0	0
		Total	150	45	105

ISC/N0009: Work effectively with others	PC1. Accurately receive information and instructions from the supervisor and fellow workers, getting clarification where required	100	10	5	5
	PC2. Accurately pass on information to authorized persons who require it and within agreed timescale and confirm its receipt		10	5	5
	PC3. Provide information to others clearly, at a pace and in a manner that helps them to understand		10	0	10
	PC4. Display helpful behaviour by assisting others in performing tasks in a positive manner, where required and possible		10	5	5
	PC5. Consult with and assist others to maximize effectiveness and efficiency in carrying out tasks		10	5	5
	PC6. Display appropriate communication etiquette while working		10	0	10
	PC7. Display active listening skills while interacting with others at work		10	0	10
	PC8. Use appropriate tone, pitch and language to convey politeness, assertiveness, care and professionalism		10	5	5
	PC9. Demonstrate responsible and disciplined behaviours at the workplace		15	5	10
	PC10. Escalate grievances and problems to supervisor		5	0	5
		Total	100	30	70