

QUALIFICATIONS PACK - OCCUPATIONAL STANDARDS FOR CAPITAL GOODS 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

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Introduction

Qualifications Pack: Heat Treatment Operator

SECTOR: CAPITAL GOODS

SUB-SECTOR:

- | | |
|------------------------------------|-----------------------------------|
| 1. Machine Tools | 4. Process Plant Machinery |
| 2. Plastic Manufacturing Machinery | 5. Electrical and Power Machinery |
| 3. Textile Manufacturing Machinery | 6. Light Engineering Goods |

OCCUPATION: Material Preparation

REFERENCE ID: CSC/ Q 1001

ALIGNED TO: NCO-2004/ 8123.10, 8123.20, 8123.30, 8123.40

Heat Treatment Operator: Perform heat treatment operations on ferrous & non-ferrous metals and alloys using a variety of equipment.

Brief Job Description: It involves applying pre-heat treatment procedures, carrying out heat treatments such as flame hardening, case hardening, hardening, carburizing, tempering, annealing and normalizing, as applicable. It also involves inspecting the components and correcting faults.

Personal Attributes: Basic communication, numerical and computational abilities. Openness to learning, ability to plan and organize own work and identify and solve problems in the course of working. Understanding the need to take initiative and manage self and work to improve efficiency and effectiveness

Job Details

Qualifications Pack Code	CSC/ Q 1001		
Job Role	Heat Treatment Operator		
Credits NSQF	TBD	Version number	1.0
Sector	CAPITAL GOODS	Drafted on	10/04/14
Sub-sector	<ol style="list-style-type: none"> 1. Machine Tools 2. Plastics Manufacturing Machinery 3. Textile Manufacturing Machinery 4. Process Plant Machinery 5. Electrical and Power Machinery 6. Light Engineering Goods 	Last reviewed on	30/12/14
Occupation	MATERIAL PREPARATION	Next review date	30/08/16
NSQC Clearance on	19/05/2015		

Job Role	Heat Treatment Operator
Role Description	Perform heat treatment operations on ferrous & non-ferrous metals and alloys using a variety of equipment.
NSQF level	2
Minimum Educational Qualifications	8 th Standard
Maximum Educational Qualifications	N.A.
Training (Suggested but not)	No Previous Training Required
Minimum Job Entry Age	18 Years Old
Experience	No Previous Experience Required
Applicable National Occupational Standards (NOS)	<p>Compulsory:</p> <ol style="list-style-type: none"> CSC/ N 1001 (Perform heat treatment operations on ferrous & non-ferrous metals and alloys using a variety of equipment) CSC/ N 1335 (Use basic health and safety practices at the workplace) CSC/ N 1336 (Work effectively with others) <p>Optional: N.A.</p>
Performance Criteria	As described in the relevant OS 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.	

CSC/ N 1001: Perform heat treatment operations on ferrous & non-ferrous metals and alloys using a variety of equipment

National Occupational Standard	Unit Code	CSC/ N 1001
	Unit Title (Task)	Perform heat treatment operations on ferrous & non-ferrous metals and alloys using a variety of equipment
	Description	<p>This unit covers the competencies required for performing heat treatment operations on ferrous, non-ferrous metals and alloys using a variety of equipment. This involves preparing for the heat treatment activities by obtaining all the necessary job instructions, materials, tools and methods to suit work requirements; preparing the tools and equipment, applying heat treatment procedures, identifying imperfections, using measuring equipment, understanding processing hazards and finally carrying out heat treatment on the material with appropriate tools and process to match specifications.</p> <p>The candidate will be expected to perform under supervision as per instructions given.</p>
	Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> • Working safely • Preparing for performing heat treatment operations • Carrying out heat treatment operations
Performance Criteria(PC) w.r.t. the Scope		
Element	Performance Criteria	
Working safely	<p>The user / individual on the job should be able to:</p> <p>PC1. work safely at all times, complying with health and safety legislation, regulations and other relevant guidelines</p> <p>PC2. adhere to procedures or systems in place for health and safety, personal protective equipment (PPE) and other relevant safety regulations for heat treatment operations</p> <p>PC3. work following laid down procedures and instructions</p> <p>PC4. ensure that all tools, equipment, power tool cables, extension leads are in a safe and usable condition and are kept at secured location</p> <p>PC5. ensure work area is clean and safe from hazards before and after the job is completed</p>	
Preparing for performing heat treatment operations	<p>The user / individual on the job should be able to:</p> <p>PC6. prepare and maintain the work area as per procedure or operation specification</p> <p>PC7. identify job requirements for performing heat treatment operations as per instructions given from valid sources</p> <p>Valid sources: job instruction sheet/job card; work drawings; supervisor/incharge</p> <p>Job requirements: tools, equipment, materials or components required; dimensions; tolerances; surface texture requirements; inspection requirements; operations required; sequence and procedures; shape or profiles</p> <p>PC8. obtain various tools, equipment and production/consumables materials</p>	

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	<p>required for performing heat treatment operations as per specifications Equipment and tools: furnaces (gas, electric, oil fired, vacuum, hearth, pit type, muffle); induction heating; kilns; tempering ovens; heated baths; salt baths; gas torches; specialized tongs/tools and lifting equipment</p> <p>PC9. ensure that all measuring equipment are within calibration date and are approved for usage</p> <p>PC10. prepare the materials in readiness to receive the appropriate heat treatment Preparation activities: cleaning the surface(eg. removing scale, oil and dirt); degreasing; drying at the correct temperature; masking the materials to contain the case hardening or carburising deposits; polishing the material surface to be tempered using manual methods; packing or coating the components with a carbon enriched material; pre-heating before immersion into a salt bath; pickling; sand blasting ; ascertain type of loading</p> <p>PC11. prepare the components, tools and equipment for the heat treatment activities as specified in the job specification documents Preparation activities: setting furnace or salt bath controls to give the correct temperature; the procedure for lighting and extinguishing the blacksmith's forge; setting up gas torches; ensuring that suitable tongs/handling/lifting devices are available Documents: detailed component drawings, approved sketches, illustrations, schematic diagrams, fabrication drawings, casting drawings</p> <p>PC12. check that the heat treatment equipment is at satisfactory operating conditions</p>
<p>Carrying out heat treatment operations</p>	<p>The user / individual on the job should be able to:</p> <p>PC13. carry out various kinds of heat treatment processes Heat treatment processes: tempering heat treatment process, annealing heat treatment process, normalizing/stress relieving heat treatment process, carburising heat treatment process</p> <p>PC14. prepare furnace/forge or torch by lighting, using approved procedures</p> <p>PC15. cool the treated object using appropriate amounts of cooling medium so that it will not overheat or reach flash point</p> <p>PC16. ensure that components are loaded safely into the heat source/solution and are left for the required induction period</p> <p>PC17. remove the components safely and correctly from the heat source/solution</p> <p>PC18. carry out quenching/cooling of the components, using the appropriate medium and technique Quenching/cooling media: fresh water, salt water, oil, air, sand, left in the furnace to cool</p> <p>PC19. inspect the final heat treated component to check if it is as per specification and without defects</p> <p>PC20. deal promptly and effectively with problems within control, and seek help and guidance from the relevant people for problems that cannot be resolved</p>

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	<p>PC21. shut down the heat treatment equipment to a safe condition on completion of the activities</p> <p>PC22. leave the work area in a safe and tidy condition on completion of the fitting activities</p> <p>PC23. refer unresolved job related problems to appropriate personnel for support</p> <p>PC24. monitor the problem and keep the supervisor informed about progress or any delays in resolving the problem</p>
Knowledge and Understanding (K)	
<p>A. Organizational Context (Knowledge of the company / organization and its processes)</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. relevant legislation, standards, policies, and procedures followed in the company relevant to own employment and performance conditions</p> <p>KA2. relevant health and safety requirements applicable in the work place</p> <p>KA3. own job role and responsibilities and sources for information pertaining to employment terms, entitlements, job role and responsibilities</p> <p>KA4. reporting structure, inter-dependent functions, lines and procedures in the work area</p> <p>KA5. how to engage with specialists for support in order to resolve incidents and service requests</p> <p>KA6. importance of working in clean and safe environment practices and procedures</p> <p>KA7. relevant people and their responsibilities within the work area</p> <p>KA8. escalation matrix and procedures for reporting work and employment related issues</p>
<p>B. Technical Knowledge</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. kinds of common metals, metal alloys and non-metals</p> <p>KB2. common terminology used in heat treatment procedures</p> <p>KB3. media to be used in heat treatment for different types of material Range of Materials: ferrous metals: eg. carbon steels, stainless steels, cast iron, tool steel, hard metals; non-ferrous metals: eg. bronze, bronze alloys, copper and copper alloys</p> <p>KB4. specific health and safety precautions which must be taken when carrying out heat treatment processes</p> <p>KB5. hazards associated with carrying out heat treatment processes and how they can be minimized Hazards: handling hot materials; using heat treatment solutions; fume inhalation; splashes from hot oil or liquids; working with fire and explosive mixtures</p> <p>KB6. importance of ensuring that fume extraction equipment is operating effectively, and that good housekeeping and fire prevention procedures are observed</p> <p>KB7. importance of following job instructions and defined heat treatment procedures</p> <p>KB8. material preparation methods and techniques to be undertaken, prior to applying the heat treatments</p> <p>KB9. heat treatment processes to be carried out, and the types of application and metals for which they are best suited</p>

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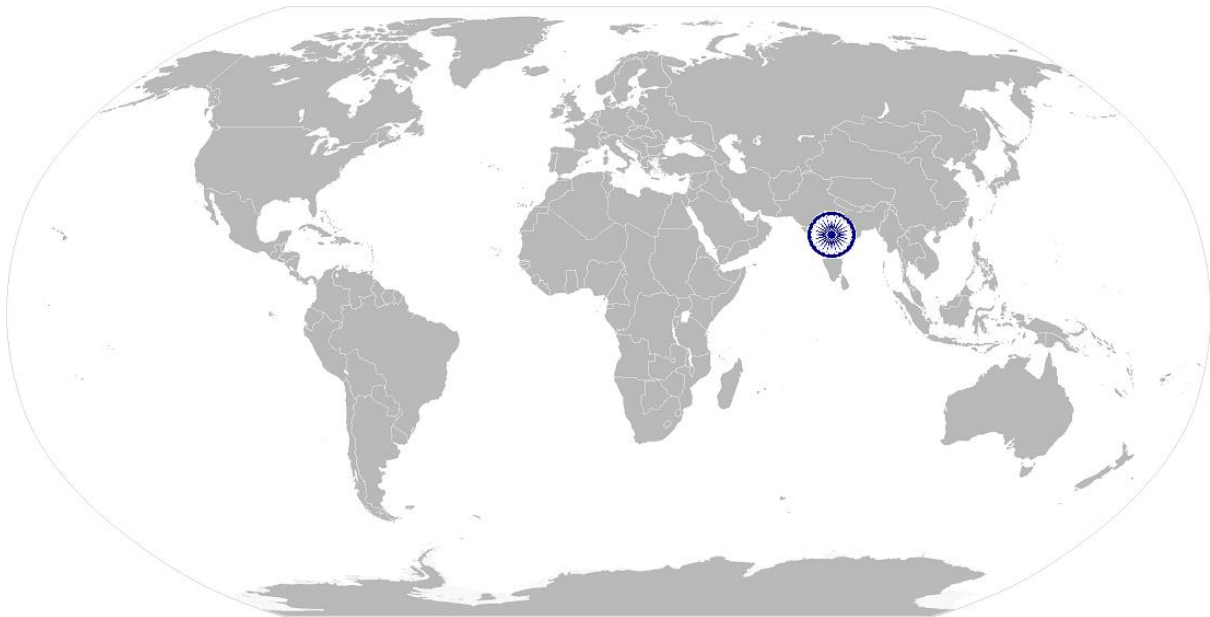
	<p>KB10. equipment used in heat treatment activities</p> <p>KB11. preparation of equipment for heat treatment activities</p> <p>KB12. methods used to hold/secure components in a heat treatment solution such as wires, hooks, jigs, etc.</p> <p>KB13. importance of monitoring equipment settings and process solutions during the heat treatment process</p> <p>KB14. correct temperature for heating of components as per the process being carried out and its importance</p> <p>KB15. quenching and cooling methods to be used</p> <p>KB16. need to maintain quenching oil at a temperature below its flash point</p> <p>KB17. problems that can occur with the heat treatment operations, and how these can be overcome</p> <p>KB18. procedures for handling components with imperfections/defects that cannot be removed/repared and how can they be minimized</p> <p>KB19. importance of leaving the work area and equipment in a safe and clean condition on completion of the heat treatment activities</p> <p>KB20. importance of reporting problems in a timely manner</p> <p>KB21. methods and parameters to check quality of the shaped components against required quality standards</p> <p>KB22. consumable related to heat treatment procedures</p> <p>KB23. calibration schedule of all equipment used in heat treatment procedure</p> <p>KB24. keep record of the heat treatment job including data logging, chart recording of various activities and data points like tolerance levels, etc.</p> <p>KB25. importance of tools and equipment to be kept in a safe and usable condition</p> <p>KB26. personal protective equipment (PPE) and clothing that must be worn during the heat treatment activity and from where can it be obtained</p>
Skills (S) [Optional]	
A. Core Skills/ Generic Skills	Communication
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. read and interpret information correctly from various job specification documents, manuals, health and safety instructions, memos, etc. applicable to the job in English and/or local language</p> <p>SA2. fill up appropriate technical forms, process charts, activity logs as per organizational format in English and/or local language</p> <p>SA3. convey and share technical information clearly using appropriate language</p> <p>SA4. check and clarify task-related information</p> <p>SA5. liaise with appropriate authorities using correct protocol</p> <p>SA6. communicate with people in respectful form and manner in line with organizational protocol</p>
	Numerical and computational skills
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SA1. undertake basic numerical computations and calculations Numerical computations: addition, subtraction, multiplication, division, fractions and decimals, percentages and proportions, simple ratios and averages</p> <p>SA2. identify various basic, compound and solid shapes as per dimensions given</p>

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	<p>Basic shapes: square, rectangle, triangle, circle, quadrilaterals Compound shapes: involving squares, rectangles, triangles, circles, semi-circles, quadrants of a circle Solid shapes: cube, rectangular prism, cylinder</p> <p>SA3. use appropriate measuring techniques and units of measurement SA4. use appropriate units and number systems to express degree of accuracy Units and number systems representing degree of accuracy: decimals places, significant figures, fractions as a decimal quantity SA5. use metric systems of measurement</p>
	<p>Learning</p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SA6. participate in on-the-job and other learning, training and development interventions and assessments SA7. clarify task related information with appropriate personnel or technical adviser SA8. seek to improve and modify own work practices SA9. maintain current knowledge of application standards, legislation, codes of practice and product/process developments</p>
<p>B. Professional Skills</p>	<p>Problem Solving</p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SB1. identify problems with work planning, procedures, output and behavior and their implications SB2. prioritize and plan for problem solving SB3. communicate problems appropriately to others SB4. identify sources of information and support for problem solving SB5. seek assistance and support from other sources to solve problems SB6. identify effective resolution techniques SB7. select and apply resolution techniques SB8. seek evidence for problem resolution</p> <p>Plan and Organize</p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SB9. plan, prioritize and sequence work operations as per job requirements SB10. organize and analyze information relevant to work SB11. basic concepts of shop-floor work productivity including waste reduction, efficient material usage and optimization of time</p> <p>Initiative and Enterprise</p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SB12. undertake and express new ideas and initiatives to others SB13. modify work plan to overcome unforeseen difficulties or developments that occur as work progresses SB14. participate in improvement procedures including process, quality and internal/external customer/supplier relationships SB15. one's competencies in new and different situations and contexts to achieve more</p>

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	Self-Management
	The user/individual on the job needs to know and understand how to: SB16. exercise restraint while expressing dissent and during conflict situations SB17. avoid and manage distractions to be disciplined at work SB18. manage own time for achieving better results
	Teamwork
	The user/individual on the job needs to know and understand how to: SB19. work in a team in order to achieve better results SB20. identify and clarify work roles within a team SB21. communicate and cooperate with others in the team for better results SB22. seek assistance from fellow team members



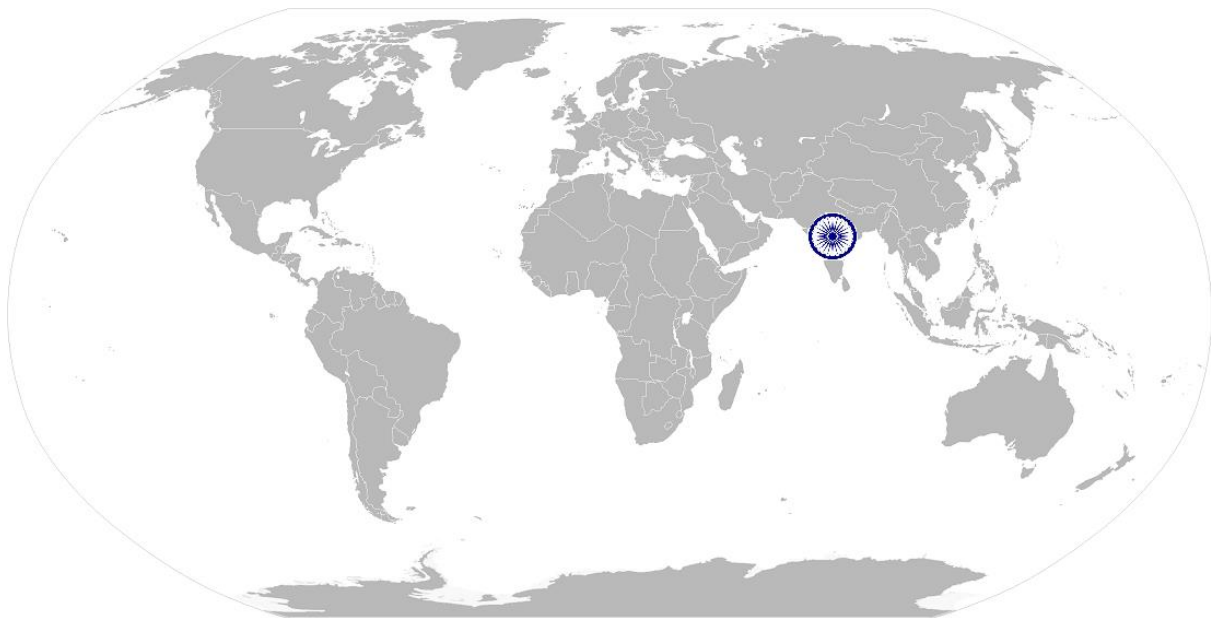
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NOS Version Control

NOS Code	CSC/ N 1001		
Credits NSQF	TBD	Version number	1.0
Industry	Capital Goods	Drafted on	10/04/14
Industry Sub-sector	<ol style="list-style-type: none"> 1. Machine Tools 2. Dies, Moulds And Press Tools 3. Plastics Manufacturing Machinery 4. Textile Manufacturing Machinery 5. Process Plant Machinery 6. Electrical and Power Machinery 7. Light Engineering Goods 	Last reviewed on	30/12/14
Occupation	Material Preparation	Next review date	30/08/16

CSC/ N 1335: Use basic health and safety practices at the workplace

National Occupational Standard



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.

CSC/ N 1335: Use basic health and safety practices at the workplace

National Occupational Standard	Unit Code	CSC / N 1335
	Unit Title (Task)	Use basic health and safety practices at the workplace
	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> <p>It covers knowledge of fire safety, common first aid applications, safe practices and emergency procedures.</p>
	Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> • Health and safety • Fire safety • Emergencies, rescue and first-aid procedures
Performance Criteria(PC) w.r.t. the Scope		
Element	Performance Criteria	
Health and safety	<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: leather or asbestos gloves, flame proof aprons, flame proof overalls buttoned to neck, cuffless (without folds), trousers, reinforced footwear, helmets/hard hats, cap and shoulder covers, ear defenders/plugs, safety boots, knee pads, particle masks, glasses/goggles/visors</p> <p>Equipment: hand shields, machine guards, residual current devices, shields, dust sheets, respirator</p> <p>PC2. state the name and location of people responsible for health and safety in the workplace</p> <p>PC3. state the names and location of documents that refer to health and safety in the workplace</p> <p>PC4. identify job-site hazardous work and state possible causes of risk or accident in the workplace</p> <p>Hazards: sharp edged and heavy tools; heated metals; oxyfuel and gas cylinders; welding radiation; hazardous surfaces(sharp, slippery, uneven, chipped, broken, etc.); hazardous substances(chemicals, gas, oxy-fuel, fumes, dust, etc.); physical hazards(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 hazards (power supply and points, loose and naked cables and wires, electrical machines and appliances, etc.)</p>	

CSC/ N 1335: Use basic health and safety practices at the workplace

	<p>Possible causes of risk and accident: physical actions; reading; listening to and giving instructions; inattention; sickness and incapacity (such as drunkenness); health hazards (such as untreated injuries and contagious illness)</p> <p>PC5. carry out safe working practices while dealing with hazards to ensure the safety of self and others</p> <p>Safe working practices: 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.</p> <p>PC6. state methods of accident prevention in the work environment of the job role</p> <p>Methods of accident prevention: 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</p> <p>PC7. state location of general health and safety equipment in the workplace</p> <p>General health and safety equipment: fire extinguishers; first aid equipment; safety instruments and clothing; safety installations(eg fire exits, exhaust fans)</p> <p>PC8. inspect for faults, set up and safely use steps and ladders in general use</p> <p>Ladder faults: corrosion of metal components, deterioration, splits and cracks timber components, imbalance, loose rungs, missing/unfixed nuts or bolts, etc.</p> <p>Ladders set up: firm/level base, clip/lash down, leaning at the correct angle, etc.</p> <p>PC9. work safely in and around trenches, elevated places and confined areas</p> <p>PC10. lift heavy objects safely using correct procedures</p> <p>PC11. apply good housekeeping practices at all times</p> <p>Good housekeeping practices: clean/tidy work areas, removal/disposal of waste products, protect surfaces</p> <p>PC12. identify common hazard signs displayed in various areas</p> <p>Various areas: on chemical containers; equipment; packages; inside buildings; in open areas and public spaces, etc.</p> <p>PC13. retrieve and/or point out documents that refer to health and safety in the workplace</p>
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CSC/ N 1335: Use basic health and safety practices at the workplace

	<p>Documents: fire notices, accident reports, safety instructions for equipment and procedures, company notices and documents, legal documents (eg government notices)</p>
<p>Fire safety</p>	<p>The user/individual on the job should be able to:</p> <p>PC14. use the various appropriate fire extinguishers on different types of fires correctly</p> <p>Types of fires: Class A: eg. ordinary solid combustibles, such as wood, paper, cloth, plastic, charcoal, etc.; Class B: flammable liquids and gases, such as gasoline, propane, diesel fuel, tar, cooking oil, and similar substances; Class C: eg. electrical equipment such as 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> <p>PC15. demonstrate rescue techniques applied during fire hazard</p> <p>PC16. demonstrate good housekeeping in order to prevent fire hazards</p> <p>PC17. 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>PC18. demonstrate how to free a person from electrocution</p> <p>PC19. administer appropriate first aid to victims where required eg. in case of bleeding, burns, choking, electric shock, poisoning etc.</p> <p>PC20. demonstrate basic techniques of bandaging</p> <p>PC21. respond promptly and appropriately to an accident situation or medical emergency in real or simulated environments</p> <p>PC22. perform and organize loss minimization or rescue activity during an accident in real or simulated environments</p> <p>PC23. 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</p> <p>PC24. demonstrate the artificial respiration and the CPR Process</p> <p>PC25. participate in emergency procedures</p> <p>Emergency procedures: raising alarm, safe/efficient, evacuation, correct means of escape, correct assembly point, roll call, correct return to work</p> <p>PC26. complete a written accident/incident report or dictate a report to another person, and send report to person responsible</p> <p>Incident Report includes details of: 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</p> <p>PC27. demonstrate correct method to move injured people and others during an emergency</p>
<p>Knowledge and Understanding (K)</p>	

CSC/ N 1335: Use basic health and safety practices at the workplace

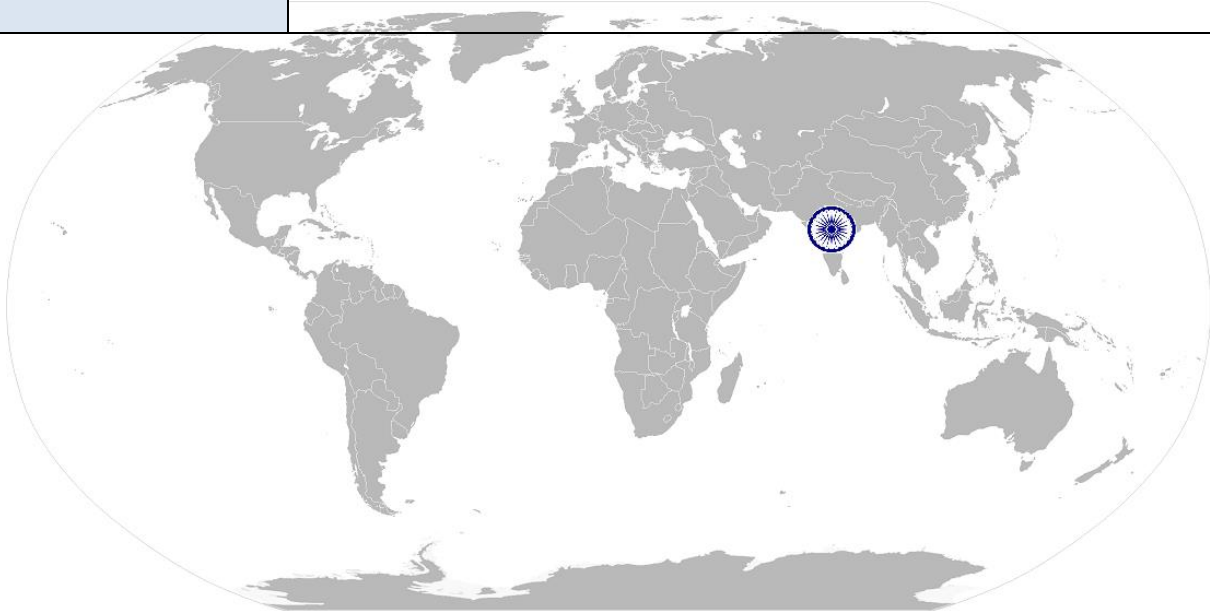
<p>A. Organizational Context (Knowledge of the company / organization and its processes)</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. names (and job titles if applicable), and where to find, all the people responsible for health and safety in a workplace.</p> <p>KA2. 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>KB1. meaning of “hazards” and “risks”</p> <p>KB2. health and safety hazards commonly present in the work environment and related precautions</p> <p>KB3. possible causes of risk, hazard or accident in the workplace and why risk and/or accidents are possible</p> <p>KB4. possible causes of risk and accident Possible causes of risk and accident: physical actions; reading; listening to and giving instructions; inattention; sickness and incapacity (such as drunkenness); health hazards (such as untreated injuries and contagious illness)</p> <p>KB5. methods of accident prevention Methods of accident prevention: 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</p> <p>KB6. safe working practices when working with tools and machines</p> <p>KB7. safe working practices while working at various hazardous sites</p> <p>KB8. where to find all the general health and safety equipment in the workplace</p> <p>KB9. various dangers associated with the use of electrical equipment</p> <p>KB10. 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 Toxic materials: solvents, flux, lead</p> <p>KB11. importance of using protective clothing/equipment while working</p> <p>KB12. precautionary activities to prevent the fire accident</p> <p>KB13. various causes of fire Causes of fires: heating of metal; spontaneous ignition; sparking; electrical heating; loose fires (smoking, welding, etc.); chemical fires; etc.</p> <p>KB14. techniques of using the different fire extinguishers</p> <p>KB15. different methods of extinguishing fire</p> <p>KB16. different materials used for extinguishing fire Materials: sand, water, foam, CO₂, dry powder</p> <p>KB17. rescue techniques applied during a fire hazard</p> <p>KB18. various types of safety signs and what they mean</p>

CSC/ N 1335: Use basic health and safety practices at the workplace

	<p>KB19. appropriate basic first aid treatment relevant to the condition eg. shock, electrical shock, bleeding, breaks to bones, minor burns, resuscitation, poisoning, eye injuries</p> <p>KB20. content of written accident report</p> <p>KB21. potential injuries and ill health associated with incorrect manual handling</p> <p>KB22. safe lifting and carrying practices</p> <p>KB23. personal safety, health and dignity issues relating to the movement of a person by others</p> <p>KB24. potential impact to a person who is moved incorrectly</p>
Skills (S) [Optional]	
A. Core Skills/ Generic Skills	Reading and Writing Skills
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SA1. read and comprehend basic content to read labels, charts, signages</p> <p>SA2. read and comprehend basic English to read manuals of operations</p> <p>SA3. read and write an accident/incident report in local language or English</p>
	Oral Communication (Listening and Speaking skills)
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SA4. question coworkers appropriately in order to clarify instructions and other issues</p> <p>SA5. give clear instructions to coworkers, subordinates others</p>
	Decision Making
	<p>The user/individual on the job needs to know and understand how to:</p> <p>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</p>
B. Professional Skills	Plan and Organize
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB1. plan and organize their own work schedule, work area, tools, equipment and materials to maintain decorum and for improved productivity</p>
	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</p> <p>SB3. follow appropriate protocols for communication based on situation, hierarchy, organizational culture and practice</p> <p>SB4. ask for, provide and receive required assistance where possible to ensure achievement of work related objectives</p> <p>SB5. thank coworkers for any assistance received</p> <p>SB6. offer appropriate respect based on mutuality and respect for fellow workmanship and authority</p>	

CSC/ N 1335: Use basic health and safety practices at the workplace

	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



CSC/ N 1335: Use basic health and safety practices at the workplace

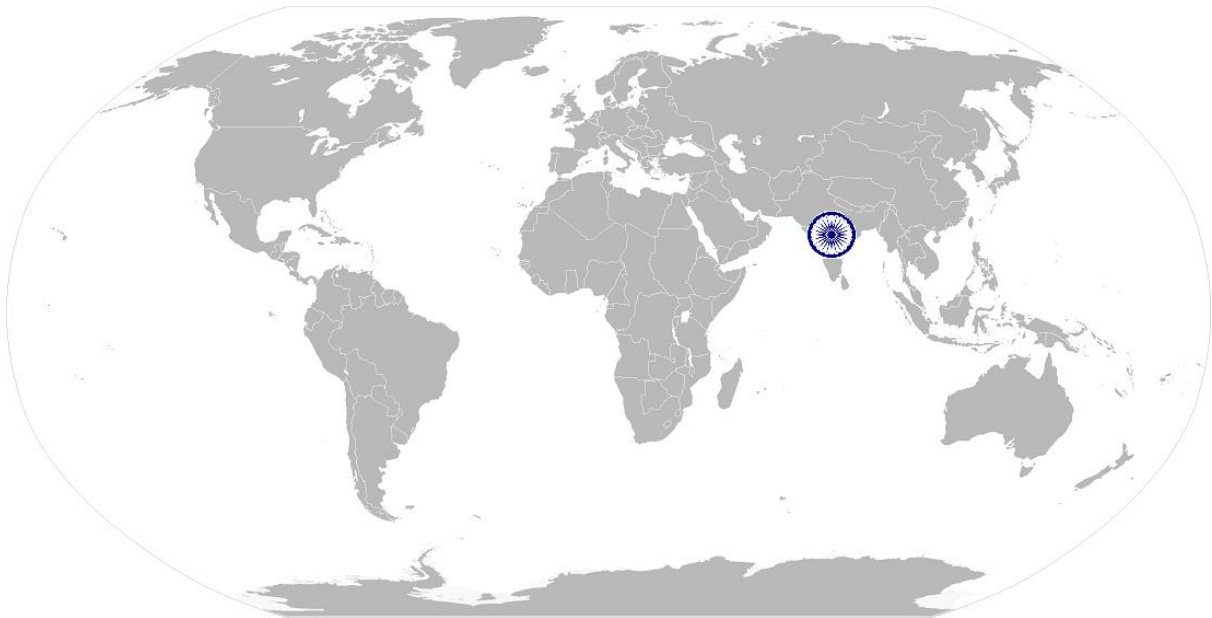
NOS Version Control

NOS Code	CSC / N 1335		
Credits (NSQF)	TBD	Version number	1.0
Industry	Capital Goods	Drafted on	10/04/14
Industry Sub-sector	<ol style="list-style-type: none"> 1. Machine Tools 2. Dies, Moulds And Press Tools 3. Plastics Manufacturing Machinery 4. Textile Manufacturing Machinery 5. Process Plant Machinery 6. Electrical and Power Generation Machinery 7. Light Engineering Goods 	Last reviewed on	30/12/14
Occupation	Material Preparation	Next review date	30/08/16

CSC/ N 1336:

Work effectively with others

National Occupational Standard



Overview

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

CSC/ N 1336:

Work effectively with others

National Occupational Standard

Unit Code	CSC / N 1336
Unit Title (Task)	Work effectively with others
Description	<p>This unit covers basic etiquette and competencies that a candidate is required to possess and demonstrate in their behavior and interactions with others at the workplace.</p> <p>These cover areas such as communication etiquette, discipline, listening, handling conflict and grievances.</p>
Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> Working with others
Performance Criteria (PC) w.r.t. the Scope	
Element	Performance Criteria
Working with others	<p>The user/individual on the job should be able to:</p> <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. give information to others clearly, at a pace and in a manner that helps them to understand</p> <p>PC4. display helpful behavior 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>Communication etiquette: do not use abusive language; use appropriate titles and terms of respect; do not eat or chew while talking (vice versa)etc.</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 behaviors at the workplace</p> <p>Disciplined behaviors: e.g. punctuality; completing tasks as per given time and standards; not gossiping and idling time; eliminating waste, honesty, etc.</p> <p>PC10. escalate grievances and problems to appropriate authority as per procedure to resolve them and avoid conflict</p>
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and its processes)	<p>The user/individual on the job needs to know and understand:</p> <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> <p>KA4. escalation matrix and procedures for reporting work and employment related issues</p>

CSC/ N 1336:

Work effectively with others

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 behavior 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) [Optional]



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Work effectively with others

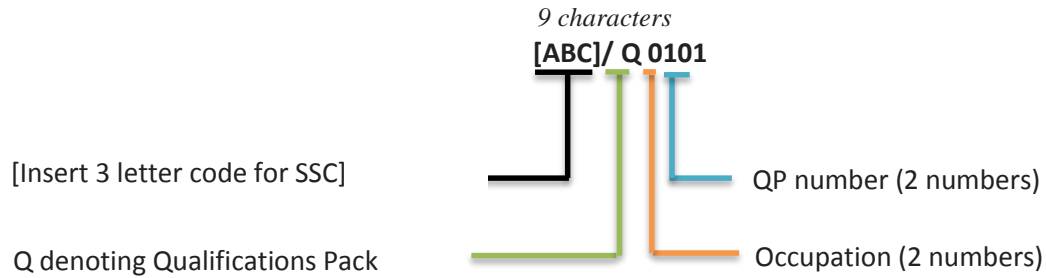
NOS Version Control

NOS Code	CSC / N 1336		
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Annexure

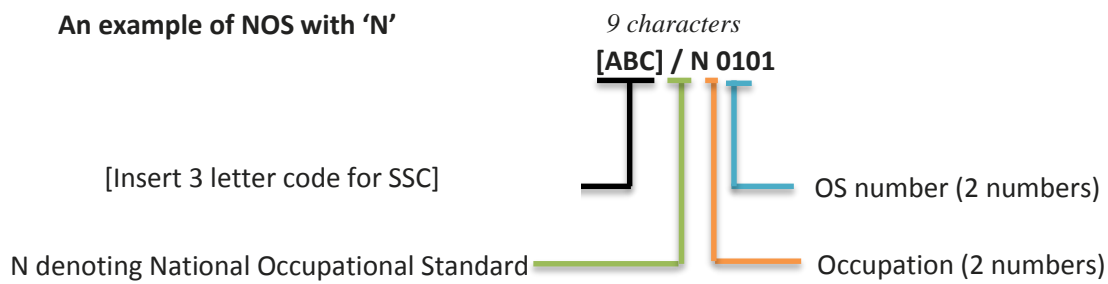
Nomenclature for QP and NOS

Qualifications Pack



Occupational Standard

An example of NOS with 'N'



The following acronyms/codes have been used in the nomenclature above:

Sub-sector	Range of Occupation numbers
Machine Tools	01-13
Dies, Moulds and Press Tools	01-13
Plastic Manufacturing Machinery	01-13
Textile Manufacturing Machinery	01-13
Process Plant Machinery	01-13
Electrical and Power Machinery	01-13
Light Engineering Goods	01-13

Sequence	Description	Example
Three letters	Capital Goods	CSC
Slash	/	/
Next letter	Whether QP or NOS	N
Next two numbers	Occupation code	01
Next two numbers	OS number	01

CRITERIA FOR ASSESSMENT OF TRAINEES

Job Role : Heat Treatment Operator

Qualification Pack : CSC/ Q 1001

Sector Skill Council : Capital Goods 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 70% 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.

Assessable Outcomes	Assessment Criteria	Total Marks (300)	Out of	Theory	Skills Practical
CSC/ N 1001 : Perform heat treatment operations on ferrous & non-ferrous metals and alloys using a variety of equipment	PC1. comply with health and safety, environmental and other relevant regulations and guidelines at work and ensure process compliance	100	4	1	3
	PC2. adhere to procedures or systems in place for risk assessment, occupational standards, personal protective equipment (PPE) and other relevant occupational safety regulations		5	1	4
	PC3. work following laid down procedures and instructions		4	1	3
	PC4. ensure that all tools, equipment, power tool cables, extension leads are in a safe and usable condition and are kept at secured location		3	0	3
	PC5. ensure work area is clean and safe from hazards before and after the job is completed		3	0	3
	PC6. prepare and maintain the work area as per procedure or operation specification		6	2	4

PC7. obtain production and consumables materials required for performing heat treatment operations as per specifications from valid sources and job requirements	4	1	3
PC8. obtain various tools and equipment required for performing heat treatment operations as per specifications	4	1	3
PC9. ensure that all measuring equipment are within calibration date and are approved for usage	3	0	3
PC10. prepare the materials in readiness to receive the appropriate heat treatment	4	0	4
PC11. prepare the components, tools and equipment for the heat treatment activities as specified in the job specification documents	6	2	4
PC12. check that the heat treatment equipment is at satisfactory operating conditions	4	0	4
PC13. carry out various kinds of heat treatment processes eg. tempering heat treatment process, annealing heat treatment process, normalizing/stress relieving heat treatment process, carburising heat treatment process	5	0	5
PC14. prepare furnace/forging or torch by lighting, using approved procedures	6	2	4
PC15. cool the treated object using appropriate amounts of cooling medium so that it will not overheat or reach flash point	5	0	5
PC16. ensure that components are loaded safely into the heat source/solution and are left for the required induction period	3	0	3
PC17. remove the components safely and correctly from the heat source/solution	4	0	4
PC18. carry out quenching/cooling of the components, using the appropriate medium and technique	5	0	5
PC19. inspect the final heat treated component to check if it is as per specification and without defects	6	2	4
PC20. deal promptly and effectively with problems within control, and seek help and guidance from the relevant people for problems that cannot be resolved	3	0	3

	PC21. shut down the heat treatment equipment to a safe condition on completion of the activities		3	0	3
	PC22. leave the work area in a safe and tidy condition on completion of the fitting activities		3	0	3
	PC23. refer unresolved job related problems to appropriate personnel for support		3	0	3
	PC24. monitor the problem and keep the supervisor informed about progress or any delays in resolving the problem		4	0	4
		Total	100	13	87
CSC/ N 1335: Use basic health and safety practices at the workplace	PC1. use protective clothing/equipment for specific tasks and work conditions	100	5	2	3
	PC2. state the name and location of people responsible for health and safety in the workplace		3	1	2
	PC3. state the names and location of documents that refer to health and safety in the workplace		3	1	2
	PC4. identify job-site hazardous work and state possible causes of risk or accident in the workplace		5	2	3
	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		4	2	2
	PC6. state location of general health and safety equipment in the workplace		3	2	1
	PC7. inspect for faults, set up and safely use steps and ladders in general use		5	2	3
	PC8. work safely in and around trenches, elevated places and confined areas		5	2	3
	PC9. lift heavy objects safely using correct procedures		5	2	3
	PC10. apply good housekeeping practices at all times		4	2	2
	PC11. identify common hazard signs displayed in various areas		5	2	3
	PC12. retrieve and/or point out documents that refer to health and safety in the workplace		3	1	2
	PC13. use the various appropriate fire extinguishers on different types of fires correctly		4	1	3
	PC14. demonstrate rescue techniques applied during fire hazard		4	1	3
	PC15. demonstrate good housekeeping in order to prevent fire hazards		3	1	2

	PC16. demonstrate the correct use of a fire extinguisher		4	1	3
	PC17. demonstrate how to free a person from electrocution		4	1	3
	PC18. administer appropriate first aid to victims where required eg. in case of bleeding, burns, choking, electric shock, poisoning etc.		4	1	3
	PC19. demonstrate basic techniques of bandaging		3	1	2
	PC20. respond promptly and appropriately to an accident situation or medical emergency in real or simulated environments		4	1	3
	PC21. perform and organize loss minimization or rescue activity during an accident in real or simulated environments		3	1	2
	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		3	1	2
	PC23. demonstrate the artificial respiration and the CPR Process		3	1	2
	PC24. participate in emergency procedures		3	2	1
	PC25. complete a written accident/incident report or dictate a report to another person, and send report to person responsible		4	1	3
	PC26. demonstrate correct method to move injured people and others during an emergency		4	1	3
		Total	100	36	64
CSC / N 1336: Work effectively with others	PC1. accurately receive information and instructions from the supervisor and fellow workers, getting clarification where required	100	10	3	7
	PC2. accurately pass on information to authorized persons who require it and within agreed timescale and confirm its receipt		10	3	7
	PC3. give information to others clearly, at a pace and in a manner that helps them to understand		10	3	7
	PC4. display helpful behavior by assisting others in performing tasks in a positive manner, where required and possible		10	3	7
	PC5. consult with and assist others to maximize effectiveness and efficiency in carrying out tasks		10	3	7

PC6. display appropriate communication etiquette while working	10	3	7
PC7. display active listening skills while interacting with others at work	10	3	7
PC8. use appropriate tone, pitch and language to convey politeness, assertiveness, care and professionalism	10	3	7
PC9. demonstrate responsible and disciplined behaviors at the workplace	10	3	7
PC10. escalate grievances and problems to appropriate authority as per procedure to resolve them and avoid conflict	10	3	7
Total	100	30	70