





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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		Co	ontents	
		1.	Introduction and Contacts	1
		2.	Qualifications Pack	2
	A SUBLIFIED	3.	Glossary of Key Terms	4
	200	4.	OS Units	6
	THE PARTY AND A	5.	Annexure: Nomenclature for QP & OS	29
CE		6.	Assessment Criteria	31

Introduction

Qualifications Pack-Oxy Fuel Gas Cutter

SECTOR/S: CAPITAL GOODS

SUB-SECTOR:

- 1. Machine Tools
- 2. Dies, Moulds and Press Tools
- 3. Plastics Manufacturing Machinery
- 4. Textile Manufacturing Machinery

OCCUPATION: Welding and Cutting

REFERENCE ID: CSC/Q0203

ALIGNED TO: NCO-2004/7212.1

- 5. Process Plant Machinery
- 6. Electrical and Power Machinery
- 7. Light Engineering Goods

Brief Job Description: Perform manual oxy-fuel cutting for a range of standard cutting job requirements using oxy-fuel gas. This is for a skilled cutter who can cut different materials (mild steel, high tensile/ special steel, other appropriate materials) in various positions.

Personal Attributes: Basic communication, numerical and computational abilities. Openness to learning, ability to plan and organise 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.









Qualifications Pack Code	CSC/Q0203		
Job Role	Oxy Fuel Gas Cutter [Applicable for National Scenarios]		
Credits	TBD	Version number	1.0
Sector	Capital Goods	Drafted on	24/04/2014
Sub-sector	 Machine Tools Dies, Moulds and Press Tools Plastics Manufacturing Machinery Textile Manufacturing Machinery Process Plant Machinery Electrical and Power Machinery Light Engineering Goods 	Last reviewed on	24/11/2017
Occupation	Welding and Cutting	Next review date	24/11/2021
NSQC Clearance on	20/07/2015		







Job Role	Oxy Fuel Gas Cutter
Role Description	Perform manual oxy-fuel cutting for a range of standard cutting job requirements using oxy-fuel gas. Cut different materials (cast mild steels, high tensile/special steels, other materials) in various profiles.
NSQF level	3
Minimum Educational Qualifications	8 th Standard pass, preferably
Maximum Educational Qualifications	Not Applicable
Prerequisite License or Training	No Previous Training Required
Minimum Job Entry Age	18 Years
Experience	No Previous Experience Required
Applicable National Occupational Standards (NOS)	Compulsory: 1. CSC/N0203 Manually cut metal and metal alloys using oxyfuel gases 2. CSC/N1335 Use basic health and safety practices at the workplace 3. CSC/N1336 Work effectively with others
Performance Criteria	As described in the relevant OS units







Keywords /Terms	Description
Sector	Sector is a conglomeration of different business operations having similar business 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.
Occupation	Occupation is a set of job roles, which perform similar/ related set of functions in an industry.
Jobrole	Job role defines a unique set of functions that together form a unique employment opportunity in an organisation.
Occupational Standards (OS)	OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the knowledge and understanding they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria	Performance criteria are statements that together specify the standard of performance required when carrying out a task.
National Occupational Standards (NOS)	NOS are occupational standards which apply uniquely in the Indian context.
Qualifications Pack(QP)	QP comprises the set of OSs, together with the educational, training and other criteria required to perform a job role. A QP is assigned a unique qualifications pack code.
Electives	Electives are NOS/set of NOS that are identified by the sector as contributive to specialization in a job role. There may be multiple electives within a QP for each specialized job role. Trainees must select at least one elective for the successful completion of a QP with Electives.
Options	Options are NOS/set of NOS that are identified by the sector as additional skills. There may be multiple options within a QP. It is not mandatory to select any of the options to complete a QP with Options.
Unit Code	Unit code is a unique identifier for an Occupational Standard, which is denoted by an 'N'
Unit Title	Unit title gives a clear overall statement about what the incumbent should be able to do.
Description	Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for.
Scope	Scope is a 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 quality of performance required.
Knowledge and Understanding	Knowledge and understanding are statements which together specify the technical, generic, professional and organisational specific knowledge that an individual need to perform to the required standard.
Organisational Context	Organisational context includes the way the organisation is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
TechnicalKnowledge	Technical knowledge is the specific knowledge needed to accomplish specific designated responsibilities.







Acronyms

Core Skills/Generic Skills	Core skills or generic skills are a group of skills that are the key to learning and working in today's world. These skills are typically needed in any work environment in today's world. In the context of the OS, these include communication related skills that are applicable to most job roles.
Keywords /Terms	Description
WPS	Welding Procedure Speciation
HAZ	Heat Affected Zone
CO ₂	Carbon Dioxide
CPR	Cardiac Pulmonary Resuscitation
PPE	Personal Protective Equipment

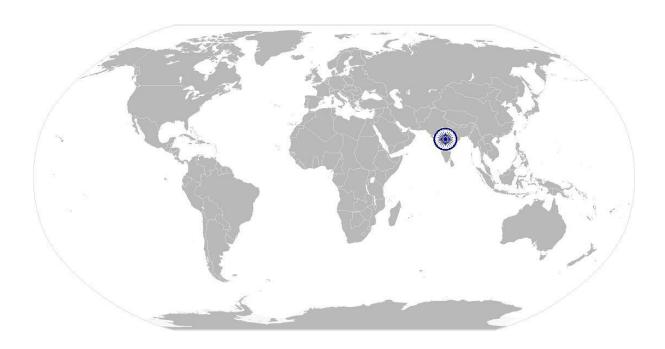








National Occupational Standard



Overview

This unit is about competencies required for manual cutting operations using oxy-fuel gas. The person would be able to independently carry out oxy-fuel gas cutting operations as per welding procedure specification (WPS).









Unit Code	CSC/N0203
Unit Title (Task)	Manually cut metal and metal alloys using oxy-fuel gases
Description	This unit is about competencies required for manual cutting operations to cut different
	materials in various positions by using oxy-fuel gas such as oxy-acetylene. The person
	would be able to independently carry out oxy- fuel cutting operations for as per welding
	procedure specification (WPS).
Scope	This unit/task covers the following:
	Work safely
	Prepare for cutting operations
	Carry out cutting operations
	Test for accuracy
	Deal with contingencies
Performance Criteria(F	PC) w.r.t. the Scope
Element	Performance Criteria
Work safely	To be competent, the user/individual on the job must be able to:
	PC1. work safely at all times, complying with health and safety legislation, regulations and other relevant guidelines
	Safety precautions: general workshop safety, fire prevention, general hazards,
	manual lifting, overhead lifting, surface conditions, stability of surrounding
	structures, furniture, etc.
	PC2. take necessary safety precautions for gas cutting operations including
	equipment, processes and checks
Prepare for cutting	To be competent, the user/individual on the job must be able to:
operations	PC3. interpret cutting procedure data sheets specifications
	PC4. check regulators, hoses and check that valves are securely connected and free
	from leaks and damage
	PC5. check equipment is calibrated and approved for use
	PC6. check/fit the correct size gas nozzle to the torch
	PC7. ensure preheat and oxygen holes on the tips are clean
	PC8. check that a flashback arrestor is fitted
	PC9. set appropriate gas pressures PC10. use the correct procedure for lighting, adjusting and extinguishing the flame
	Lighting and cutting procedures: lighting the cutting torch; adjusting gas
	controls to produce a neutral flame; methods of starting the cut and
	controlling the cutting speed; direction and angle of cut; procedure for









CSC/N0203 Manua	ally cut metal and metal alloys using oxy-fuel gases
	PC11. adjust torch valve for type of flame such as neutral, carburizing and oxidizing
	PC12. follow sequence of operations such as pre-heating material and initiating cut
	PC13. mark out the locations for cutting accurately and as per requirement
	PC14. use appropriate and safe procedures for handling and storing of gas cylinders
	PC15. prepare the work area for the cutting activities
	PC16. obtain the appropriate tools and equipment for the oxy-fuel gas cutting
	operations, and check that they are in a safe and usable condition
	Equipment: hand-held oxy-fuel gas cutting equipment, simple, portable,
	track-driven cutting equipment (electrical or mechanical), fixed bench gas
	cutting equipment
	PC17. check that the oxy-fuel gas cutting equipment is set up for the operations to
	be performed
	PC18. adjust cylinder valves and adjust regulator for operating pressure to achieve
	specifications for required operations
	PC19. where appropriate, mark out the components for the required operations,
	using appropriate tools and techniques
	PC20. perform trial cut to check for cut defects
Carry out cutting	To be competent, the user/individual on the job must be able to:
operations	PC21. operate the oxy-fuel gas cutting equipment to produce items/cut shapes to
	the dimensions and profiles specified
	PC22. use various types of oxy-fuel gas cutting methods
	PC23. perform various cutting operations correctly
	Cutting operations: down-hand straight cuts (freehand), making straight cuts
	(track guided), cutting regular shapes, cutting irregular shapes, making angled
	cuts, cutting chamfers, making radial cuts, gouging/flushing, beveled edge –
	weld preparations, cutting out holes
	PC24. produce thermal cuts in various forms of material (metal of 3mm and above)
	PC25. produce cut profiles for various type of materials and forms
	Materials: mild carbon steel, high tensile and special steels, other materials
	Forms: plate, rolled section, pipe/tube, solid bars
	PC26. produce thermally-cut components which meet specified quality criteria
	Quality criteria: dimensional accuracy is within the tolerances specified on the
	drawing/specification, or within +/- 2mm; angled/radial cuts are within
	specification requirements; cuts are clean and smooth and free from flutes;
	no drags
	PC27. recognize and correct burnback and flashback
	PC28. detect and correct defects in cut
	PC29. ensure the work area is left in a safe and tidy condition on completion of the
	cutting activities









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Test for accuracy	To be competent, the user/individual on the job must be able to: PC30. check that the finished components meet the standard required PC31. use appropriate methods and equipment to check the quality, and that all dimensional and geometrical aspects of the cut material are to the specification PC32. identify various cutting defects and follow organisation recommended procedures to address them Defects: distortion; grooved, fluted or ragged cuts; poor draglines; rounded edges; tightly adhering slag
Deal with contingencies	To be competent, the user/individual on the job must be able to: PC33. report any difficulties or problems that may arise with the cutting activities, and carry out any agreed actions PC34. detect equipment malfunctions and deal with them appropriately PC35. deal promptly and effectively with problems within their control, and seek help and guidance from the relevant people if they have problems that they cannot resolve PC36. shut down and make safe the cutting equipment on completion of the cutting activities PC37. follow standard emergency procedures in case of emergencies Emergencies (safety procedures): sustained backfire in a blowpipe; close the oxygen valve of the blowpipe; followed by the fuel valve and then close both cylinder valves; investigate the cause and rectify the fault; re-light the blowpipe only after it is completely cooled down; flashback into the hose and equipment, or a hose fire or explosion, or a fire at the gas regulator connections; isolate the fuel gas and oxygen supplies by closing the cylinder valves only when this can be done safely; may attempt to control the fire by fire-fighting equipment only when there is no undue risk of personal injury; activate the fire alarm and call for the Fire Services Department as per organizational procedures; fires involving acetylene cylinders; always best dealt with by firemen from the Fire Services Department. However, the following initial response may be appropriate: cool the cylinder by spraying with water only if it is safe to do so; close the cylinder valve to control the fire only if it is safe to do so; evacuate the building by activating the fire alarm or by any other means; to avoid explosion never move an acetylene cylinder involved in a fire or which has been affected by heat from a nearby fire even if
Knowledge and Haden	it seems cooled down
A. Organizational Context (Knowledge of the	The user/individual on the job needs to know and understand: KA1. job relevant legislation, standards, policies, and procedures followed in the Context company









	ally cut metal and metal alloys using oxy-fuel gases
company /	KA2. key purpose of the organization
organization and	KA3. department structure and hierarchy protocols
its processes)	KA4. work flow and own role in the workflow
	KA5. dependencies and interdependencies in the workflow
	KA6. support functions and types of support available for incumbents in this role
B. Technical	The user/individual on the job needs to know and understand:
Knowledge	KB1. types of fire extinguishers and their suitable uses in case of gas cutting related fires
	KB2. specific safety precautions to be taken when working with oxy-fuel gas cutting
	equipment in a fabrication environment
	Safety precautions: safety from trailing hoses; safety from naked flames;
	appropriate fume and gases extraction/control measures; safety from
	explosive gas mixtures and oxygen enrichment; safety from spatter and hot
	metal (distance, PPE, proper handling and placement); protection from live
	and other electrical components, including insulation, proper earthing, proper
	loading, etc.; adequate lighting; appropriate personal protective equipment;
	protection of self and others from the effects of the flame; safety measures
	for elevated and trench working; gas cylinder safety: right color code;
	correctly labelled; no leakage; away om heat or ignition source; never use
	hose other than that designed for the specified gas; use ferrules or clamps
	designed for the hose (not ordinary wire or other substitute) to connect hoses
	to fittings; upright position (fuel gas); physical care to avoid damage and falls,
	throws and bumps; move on trolleys, cap closed and without regulators;
	valves closed on empty cylinders
	KB3. personal protective clothing and equipment (PPE) to be worn when working
	with gas cutting equipment
	Personal protective equipment: suitable aprons, gloves, safety boots,
	correctly fitting overalls, suitable eye shields/goggles, respirators
	KB4. hazards associated with carrying out gas cutting activities and how they can
	be minimized
	KB5. safe working practices and procedures for using thermal equipment
	KB6. principles of oxy-fuel gas cutting
	Principles: oxygen cutting for materials which readily get oxidized; oxides
	have lower melting points than the metals; widely used for ferrous materials;
	oxygen cutting is not used for materials like aluminum, bronze, mild steels
	which resist oxidation; cutting of high carbon steels and cast irons require
	special attention due to formation of heat affected zone (HAZ) where
	structural transformation occurs; substitute hydrocarbon gases (propane,
	butane and natural gas) not suitable for cutting ferrous materials due to their
	oxidizing characteristics









- KB7. procedure for obtaining the required drawings, job instructions and other related specifications
- KB8. how to use and extract information from engineering drawings and related specifications, workpiece reference points and system of tolerances
- KB9. various types of gas cutting equipment available
 Equipment: hand-held oxy-fuel gas cutting equipment, simple, portable,
 track-driven cutting equipment (electrical or mechanical), fixed bench gas
 cutting equipment
- KB10. various components of the gas cutting equipment

 Components: color coded cylinder oxygen; color coded cylinder acetylene;

 cylinder valve; flashback arrestor; set of nozzles; gas lighter nozzle; cutting

 tips; pressure regulator; pressure gauge; non-return valves; color coded

 flexible hose; trolleys; torches (rose-bud heating, cutting, others)
- KB11. construction of the heating and cutting torch
- KB12. types of oxy-fuel gases such as acetylene, natural gas and propane
- KB13. accessories that can be used with handheld gas cutting equipment to aid cutting operations (such as cutting guides, trammels, templates)
- KB14. importance of correct marking procedure before a cut (eg. allowances for post-cut operations, punch marks,
- KB15. types of regulators such as low- and high-pressure, and single- and two-stage
- KB16. how to identify the gases used in the cutting process, and the color coding of gas cylinders
- KB17. type and thickness of base metals related to nozzle type
- KB18. preparations prior to cutting (including checking connections for leaks, setting gas pressures, setting up the material/workpiece, and checking the cleanliness of materials used)
- KB19. holding methods that are used to aid thermal cutting, and the equipment that can be used
- KB20. correct procedure for lighting, cutting and extinguishing the flame lighting and cutting procedures: lighting the cutting torch; adjusting gas controls to produce a neutral flame; methods of starting the cut and controlling the cutting speed; direction and angle of cut; procedure for extinguishing the flame
- KB21. types of flames and their implication for cutting
- KB22. importance of following the correct procedure for lighting, cutting and extinguishing a flame
- KB23. problems that can occur with thermal cutting, and how they can be avoided (including causes of distortion during thermal cutting and methods of controlling distortion)
- KB24. effects of oil, grease, scale or dirt on the cutting process









CSC/N0203	Manually c	ut metal and metal alloys using oxy-fuel gases
	KB	25. gas mixture ratio required to get various flames
	KB	26. quality parameters for gas cut materials Quality parameters: shape and length
		of the draglines; smoothness of the sides; sharpness of the top edges;
		amount of slag adhering to the metal
	KB	27. special grade materials used in industry and their behavior with oxy fuel gas
	KB	28. causes of cutting defects, how to recognize them, and methods of correction and prevention
		Defects: distortion; grooved, fluted or ragged cuts; poor draglines; rounded
		edges; tightly adhering slag
	KB	29. importance of leaving the work area in a safe and clean condition on
		completion of activities
	KB:	30. correct handling and storage of gas cylinders
		31. emergency procedures for backfires, flashback and other fires
	1	emergencies (safety procedures):sustained backfire in a blowpipe; close the
		oxygen valve of the blowpipe; followed by the fuel valve and then close both
	1	cylinder valves; investigate the cause and rectify the fault; re-light the
	no.	blowpipe only after it is completely cooled down; flashback into the hose and
	7/3	equipment, or a hose fire or explosion, or a fire at the gas regulator
		connections; isolate the fuel gas an exygen supplies by closing the cylinder
	370	valves only when this can be done safely; may attempt to control the fire by
		fire-fighting equipment only when there is no undue risk of personal injury;
		activate the fire alarm and call for the Fire Services Department as per
		organizational procedures; fires involving acetylene cylinders; always best
	0.5	dealt with by firemen from the Fire Services Department. However, the
		following initial response may be appropriate: cool the cylinder by spraying
		with water only if it is safe to do so; close the cylinder valve to control the fire
		only if it is safe to do so; evacuate the building by activating the fire alarm or
		by any other means; to avoid explosion never move an acetylene cylinder
		involved in a fire or which has been affected by heat from a nearby fire even if
		it seems cooled down
	KB	32. how to close down the cutting equipment safely and correctly
	KB	33. purging tools and their function
Skills (S)		
A. Core Skills	s/ Read	ding Skills
GenericSk	tills The	user/ individual on the job needs to know and understand how to:
		and the state of the job needs to know and anderstand now to

A. Core Skills/	Reading Skills
GenericSkills	The user/ individual on the job needs to know and understand how to: SA1. read and interpret information correctly from various job specification documents, health and safety instructions, memos, etc. applicable to the job in English and/or local language Writing Skills









SC/N0203 Manually cut metal and metal alloys using oxy-fuel gases			
The user/individual on the job needs to know and understand how to:			
SA2. fill up appropriate technical forms, process charts, activity logs as per			
organizational format in English and/or local language			
SA3. undertake numerical operations, geometry and calculations/ formulae			
(including addition, subtraction, multiplication, division, fractions and			
decimals, percentages and proportions, simple ratios and averages)			
SA4. use appropriate measuring techniques			
SA5. apply appropriate degree of accuracy to express numbers			
SA6. Units and number systems representing degree of accuracy: decimals p	olaces,		
fractions as a decimal quantity			
Oral Communication (Listening and Speaking skills)			
The user/individual on the job needs to know and understand how to:			
SA7. convey and share technical information clearly using appropriate langu	age		
SA8. check and clarify task-related information			
SA9. liaise with appropriate authorities using correct protocol			
SA10. communicate with people in respectful form and manner in line with			
organizational protocol			
3. Professional Skills Decision Making			
NA	NA		
Plan and Organize			
The user/individual on the job needs to know and understand how to:			
SB1. plan, prioritize and sequence work operations as per job requirements			
SB2. organize and analyze information relevant to work			
SB3. basic concepts of shop-floor work productivity including waste reduction	on,		
efficient material usage and optimization of time			
CustomerCentricity			
The user/individual on the job needs to know and understand how to:			
SB4. exercise restraint while expressing dissent and during conflict situation	S		
SB5. avoid and manage distractions to be disciplined at work			
SB6. manage own time for achieving better results			
SB7. work in a team in order to achieve better results			
SB8. identify and clarify work roles within a team			
SB9. communicate and cooperate with others in the team for better results			
SB10. seek assistance from fellow team members			
Problem Solving			
The user/individual on the job needs to know and understand how to:			
SB11. identify problems with work planning, procedures, output and behavio	r and		









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- SB13. communicate problems appropriately to others
- SB14. identify sources of information and support for problem solving
- SB15. seek assistance and support from other sources to solve problems
- SB16. identify effective resolution techniques
- SB17. select and apply resolution techniques
- SB18. seek evidence for problem resolution

Analytical Thinking

The user/individual on the job needs to know and understand how to:

- SB19. undertake and express new ideas and initiatives to others
- SB20. modify work plan to overcome unforeseen difficulties or developments that occur as work progresses
- SB21. participate in improvement procedures including process, quality and internal/external customer/supplier relationships
- SB22. enhance one's competencies in new and different situations and contexts to achieve more

Critical Thinking

The user/individual on the job needs to know and understand how to:

- SB23. participate in on-the-job and other learning, training and development interventions and assessments
- SB24. clarify task related information with appropriate personnel or technical adviser
- SB25. seek to improve and modify own work practices
- SB26. maintain current knowledge of application standards, legislation, codes of practice and product/process developments









NOS Version Control

NOS Code		CSC/N0203			
Credits	TBD	Version number	1.0		
Industry	Capital Goods	Drafted on	24/04/2014		
Industry Sub-sector	 Machine Tools Dies, Moulds and Press Tools Plastics Manufacturing Machinery Textile Manufacturing Machinery Process Plant Machinery Electrical and Power Machinery 	Last reviewed on	24/11/2017		
Occupation	Welding and Cutting	Next review date	24/11/2021		



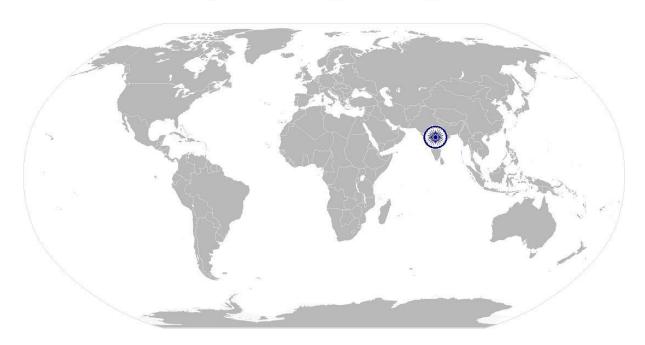






Use basic health and safety practices at the workplace

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/N1335 Use basic health and safety practices at the workplace

Unit Code	CSC/N1335
Unit Title (Task)	Use basic health and safety practices at the workplace
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.
Scope	This unit/task covers the following:
	 Health and safety Fire safety Emergencies, rescue and first-aid procedure
Performance Criteria(P	PC) w.r.t. the Scope
Element	Performance Criteria
Health and safety	PC1. use protective clothing/equipment for specific tasks and work conditions 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 Equipment: 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 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: 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.) 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





harness, fall arrestors, etc.





CSC/N1335 Use basic health and safety practices at the workplace

illness)

PC5.

safety of self and others

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

carry out safe working practices while dealing with hazards to ensure the

- PC6. state methods of accident prevention in the work environment of the job role 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
- PC7. state location of general health and safety equipment in the workplace General health and safety equipment: fire extinguishers; first aid equipment; safety instruments and clothing; safety installations(eg fire exits, exhaust fans)
- PC8. inspect for faults, set up and safely use steps and ladders in general use Ladder faults: corrosion of metal components, deterioration, splits and cracks timber components, imbalance, loose rungs, missing/ unfixed nuts or bolts, etc.
 - Ladders set up: firm/level base, clip/lash down, leaning at the correct angle, etc.
- PC9. work safely in and around trenches, elevated places and confined areas
- PC10. lift heavy objects safely using correct procedures
- PC11. apply good housekeeping practices at all times

 Good housekeeping practices: clean/tidy work areas, removal/disposal of
 waste products, protect surfaces
- PC12. identify common hazard signs displayed in various areas

 Various areas: on chemical containers; equipment; packages; inside buildings; in open areas and public spaces, etc.
- PC13. retrieve and/or point out documents that refer to health and safety in the workplace
 - Documents: fire notices, accident reports, safety instructions for equipment









CSC/N1335 Use	e basic health and safety practices at the workplace
	and procedures, company notices and documents, legal documents (eg
	government notices)
Fire safety	To be competent, the user/individual on the job must be able to: PC14. use the various appropriate fire extinguishers on different types of fires correctly
	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) PC15. demonstrate rescue techniques applied during fire hazard PC16. demonstrate good housekeeping in order to prevent fire hazards
	PC17. demonstrate the correct use of a fire extinguisher
Emergencies, rescue and first-aid procedures	To be competent, the user/individual on the job must be able to: PC18. demonstrate how to free a person from electrocution PC19. administer appropriate first aid to bleeding, burns, choking, electric shock, poisoning etc. PC20. demonstrate basic techniques of bandaging PC21. respond promptly and appropriately to an accident situation or medical emergency in real or simulated environments PC22. perform and organize loss minimization or rescue activity during an accident in real or simulated environments 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 PC24. demonstrate the artificial respiration and the CPR Process PC25. participate in emergency procedures Emergency procedures: raising alarm, safe/efficient, evacuation, correct
	means of escape, correct assembly point, roll call, correct return to work PC26. complete a written accident/incident report or dictate a report to another person, and send report to person responsible 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 PC27. demonstrate correct method to move injured people and others during an emergency









CSC/N1335 Use basic health and safety practices at the workplace

	e basic health and safety practices at the workplace
Knowledge and Unders	- 1 1
A. Organizational	The user/individual on the job needs to know and understand:
Context	KA1. names (and job titles if applicable), and where to find, all the people
(Knowledge of the	responsible for health and safety in a workplace
company /	KA2. names and location of documents that refer to health and safety in the
organization and	workplace
its processes)	
B. Technical	The user/individual on the job needs to know and understand:
Knowledge	KB1. meaning of "hazards" and "risks"
	KB2. health and safety hazards commonly present in the work environment and
	related precautions
	KB3. possible causes of risk, hazard or accident in the workplace and why risk
	and/or accidents are possible
	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)
	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
	KB6. safe working practices when working with tools and machines
	KB7. safe working practices while working at various hazardous sites
	KB8. where to find all the general health and safety equipment in the workplace
	KB9. various dangers associated with the use of electrical equipment
	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
	KB11. importance of using protective clothing/equipment while working
	KB12. precautionary activities to prevent the fire accident
	KB13. various causes of fire
	Causes of fires: heating of metal; spontaneous ignition; sparking; electrical
	heating; loose fires (smoking, welding, etc.); chemical fires; etc.
	KB14. techniques of using the different fire extinguishers
	, ,









CSC/N1335 Use	e basic health and safety practices at the workplace
	KB15. different methods of extinguishing fire
	KB16. different materials used for extinguishing fire
	Materials: sand, water, foam, CO ₂ , dry powder
	KB17. rescue techniques applied during a fire hazard
	KB18. various types of safety signs and what they mean
	KB19. appropriate basic first aid treatment relevant to the condition eg. shock,
	electrical shock, bleeding, breaks to bones, minor burns, resuscitation,
	poisoning, eye injuries
	KB20. content of written accident report
	KB21. potential injuries and ill health associated with incorrect manual handing
	KB22. safe lifting and carrying practices
	KB23. personal safety, health and dignity issues relating to the movement of a
	person by others
	KB24. potential impact to a person who is moved incorrectly
CL:Up (C)	KB24. potential impact to a person who is moved incorrectly
Skills (S)	
A. Core Skills/	Reading Skills
GenericSkills	The user/ individual on the job needs to know and understand how to:
	SA1. read and comprehend basic contents read labels, charts, signages
	SA2. read and comprehend basic English to read manuals of operations
	SA3. read an accident/incident report in local language or English
	Writing Skills
	The user/individual on the job needs to know and understand how to:
	SA4. 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:
	SA5. question coworkers appropriately in order to clarify instructions and other
	issues
	SA6. give clear instructions to coworkers, subordinates others
B. Professional Skills	Decision Making
	The user/individual on the job needs to know and understand how to:
	SB1. 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
	Plan and Organize
	The user/individual on the job needs to know and understand how to:
	SB2. plan and organize their own work schedule, work area, tools, equipment and
	materials to maintain decorum and for improved productivity
	Customer Centricity
	Customer centricity









CSC/N1335	Use basic health and safety practices at the workplace
CDCITIEDDD	ose susic ficultif and safety practices at the workplace

The user/individual on the job needs to know and understand how to:

- SB3. remain congenial while discussing and debating issues with co-workers
- SB4. follow appropriate protocols for communication based on situation, hierarchy, organizational culture and practice
- SB5. ask for, provide and receive required assistance where possible to ensure achievement of work related objectives
- SB6. thank coworkers for any assistance received
- SB7. 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:

- SB8. think through the problem, evaluate the possible solution(s) and suggest an optimum /best possible solution(s)
- SB9. identify immediate or temporary solutions to resolve delays
- SB10. identify sources of support that can be availed of for problem solving for various kind of problems
- SB11. seek appropriate assistance from other sources to resolve problems
- SB12. report problems that you cannot resolve to appropriate authority

Analytical Thinking

The user/individual on the job needs to know and understand how to:

- SB13. identify cause and effect relations in their area of work
- SB14. use cause and effect relations to anticipate potential problems and their solution

Critical Thinking

NA









CSC/N1335 Use basic health and safety practices at the workplace

NOS Version Control

NOS Code	CSC/N1335			
Credits	TBD	TBD Version number 1.0		
Industry	Capital Goods	Drafted on	24/04/2014	
Industry Sub-sector	 Machine Tools Dies, Moulds and Press Tools Plastics Manufacturing Machinery Textile Manufacturing Machinery Process Plant Machinery Electrical and Power Machinery Light Engineering Goods 	Last reviewed on	24/11/2017	
Occupation	Welding and Cutting	Next review date	24/11/2021	



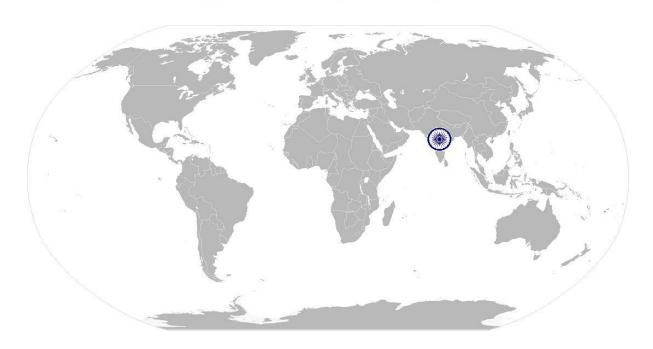






Work effectively with others

National Occupational Standard



Overview

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









Work effectively with others

Unit Code	CSC/N1336
Unit Title (Task)	Work effectively with others
Description Scope	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. These cover areas such as communication etiquette, discipline, listening etc. This unit/task covers the following: • Work effectively with others
Performance Criteria(P	C) w.r.t. the Scope
Element	Performance Criteria
Work effectively with others	To be competent, the user/individual on the job must 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. give information to others clearly, at a pace and in a manner that helps them to understand PC4. display helpful behavior 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 Communication etiquette: do not use abusive language; use appropriate titles and terms of respect; do not eat or chew while talking (vice versa)etc. 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 behaviors at the workplace Disciplined behaviors: e.g. punctuality; completing tasks as per given time and standards; not gossiping and idling time; eliminating waste, honesty, etc. PC10. escalate grievances and problems to appropriate authority as per procedure to resolve them and avoid conflict
Knowledge and Unders	tanding (K)
A. Organizational Context (Knowledge of the company /	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









CSC/N1336	Work effectively with others
organization and	work area
its processes)	KA3. relevant people and their responsibilities within the work area
	KA4. escalation matrix and procedures for reporting work and employment related
	issues
B. Technical	The user/individual on the job needs to know and understand:
Knowledge	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)	
A. Core Skills/	ReadingSkills
Generic Skills	The user/individual on the job peeds to know and understand how to:
	The user/ individual on the job needs to know and understand how to: SA1. read basic terms and terminologies to accurately interpret work related
	documents, labels, supervisor instructions in the local language
	SA2. read and interpret accurate information from various relevant work
	instructions and records
	Writing Skills
	The user/ individual on the job needs to know and understand how to:
	SA3. write clear and legible notes to self, colleagues and seniors to pass messages,
	keep records, prepare to-do lists, take down instructions
	SA4. write basic numbers, quantities and work related terminology for operational
	requirements in the local language









CSC/N1336	Work effectively with others
	Oral Communication (Listening and Speaking skills)
	The user/individual on the job needs to know and understand how to: SA5. interact with the supervisor appropriately (correct protocol and manner of speaking) in order to understand the basic requirements of the product, production plans and other associated requirements
	SA6. give clear instructions to co-workers about the type of output required and answer queries
	SA7. display active listening skills while interacting with co-workers and other in the workplace
B. Professional Skills	Decision Making
	NA
	Plan and organize
	The user/individual on the job needs to know and understand how to:
	SB1. use appropriate planning to maintain a smooth relationship with fellow team members SB2. take steps within one's limits of authority to initiate modification in plan if the circumstances require it
	Customer centricity
	The user/individual on the job needs to know and understand how to: SB3. check that work meets customer requirements SB4. deliver consistent and reliable service to internal and external customers
	Problem Solving
	The user/individual on the job needs to know and understand how to: SB5. work with co-workers and supervisor to resolve any issues that threaten disruption, increase risk, cause delays or under-achievement of quality and targets as per the planned schedule
	Analytical Thinking
	NA
	Critical Thinking
	NA









Work effectively with others

NOS Version Control

NOS Code		CSC/N1336	
Credits	TBD	Version number	1.0
Industry	Capital Goods	Drafted on	24/04/2014
Industry Sub-sector	 Machine Tools Dies, Moulds and Press Tools Plastics Manufacturing Machinery Textile Manufacturing Machinery Process Plant Machinery Electrical and Power Machinery Electrical and Power Machinery Cods Cods 	Last reviewed on	24/11/2017
Occupation	Welding and Cutting	Next review date	24/11/2021



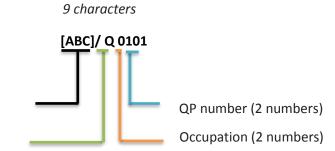




Annexure

Nomenclature for QP and NOS

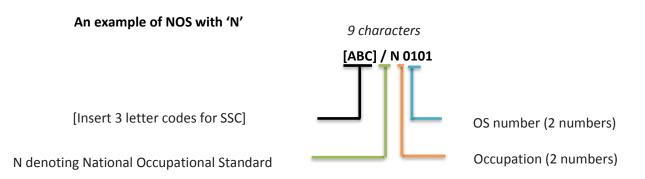
Qualifications Pack

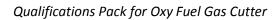


[Insert 3 letter codes for SSC]

Q denoting Qualifications Pack

Occupational Standard











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 Q P or NOS	N
Next two numbers	Occupation code	01
Next two numbers	OS number	01







Criteria For Assessment Of Trainees

Job Role: Oxy Fuel Gas Cutter

Qualification Pack: CSC/Q0203

Sector Skill Council: Capital Goods 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. Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/option NOS/set of NOS.
- 4. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below).
- 5. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training center based on this criterion.
- 6. To pass the Qualification Pack, every trainee should score a minimum of 70% of aggregate marks to successfully clear the assessment.
- 7. In case of *unsuccessful completion*, the trainee may seek reassessment on the Qualification Pack.

Compulsory NOS Total Marks: 300			Marks Allocation		
Assessment outcomes	Assessment Criteria for outcomes	Total Marks	Out of	Theory	Skills Practical
CSC/N0203 Manually cut metal and metal alloys using oxy- fuel	PC1.work safely at all times, complying with health and safety legislation, regulations and other relevant guidelines		3	1	2
gases	PC2.take necessary safety precautions for gas cutting operations including equipment, processes and checks		2	0	2
	PC3.interpret cutting procedure data sheets specifications		3	1	2
	PC5.check equipment is calibrated and approved for use		2	0	2
	PC6.check/fit the correct size gas nozzle to the torch		2	0	2
	PC7.ensure preheat and oxygen holes on the tips are clean		2	0	2
	PC8.check that a flashback arrestor is fitted		2	0	2







DCC	9.set appropriate gas pressures				
			2	0	2
	10.use the correct procedure for lighting, usting and extinguishing the flame	100	3	1	2
	11.adjust torch valve for type of flame such neutral, carburizing and oxidizing		2	0	2
	12.follow sequence of operations such as e-heating material and initiating cut		3	1	2
	13.mark out the locations for cutting curately and as per requirement		3	1	2
	14.use appropriate and safe procedures for ndling and storing of gas cylinders		3	1	2
	15.prepare the work area for the cutting ivities		2	0	2
equ ope and	16.obtain the appropriate tools and uipment for the oxy-fuel gas cutting erations, and check that they are in a safe dusable condition		2	0	2
equ	17.check that the oxy-fuel gas cutting uipment is set up for the operations to be rformed		2	0	2
reg	18.adjust cylinder valves and adjust gulator for operating pressure to achieve ecifications for required operations		3	1	2
req	19. mark out the components for the quired operations, using appropriate tools d techniques where appropriate		2	0	2
	20.perform trial cut to check for cut defects		3	0	3
equ	21.operate the oxy-fuel gas cutting uipment to produce items/cut shapes to dimensions and profiles specified		5	1	4
	22.use various types of oxy-fuel gas cutting ethods		4	0	4
	23.perform various cutting operations rectly		4	0	4
	24.produce thermal cuts in various forms of terial (metal of 3mm and above)		4	0	4
	25.produce cut profiles for various type of terials and forms		3	0	3
wh crit tole spe cut cut	26.produce thermally-cut components ich meet specified quality criteria Quality teria: dimensional accuracy is within the erances specified on the drawing/ecification, or within +/- 2mm; angled/radial are within specification requirements; are clean and smooth and free from tes; no drags		4	1	3







				ı	1
	PC27.recognize and correct burnback and flashback		3	1	2
	PC28.detect and correct defects in cut		3	1	2
	PC29.ensure the work area is left in a safe and tidy condition on completion of the cutting activities		2	0	2
	PC30.check that the finished components meet the standard required		3	1	2
	PC31.use appropriate methods and equipment to check the quality, and that all dimensional and geometrical aspects of the cut material are to the specification		4	1	3
	PC32.identify various cutting defects and follow organisation recommended procedures to address them		3	1	2
	PC33.report any difficulties or problems that may arise with the cutting activities, and carry out any agreed actions		3	1	2
	PC34.detect equipment malfunctions and deal with them appropriately		2	0	2
	PC35.deal promptly and effectively with problems within their control, and seek help and guidance from the relevant people if they have problems that they cannot resolve		2	0	2
	PC36.shut down and make safe the cutting equipment on completion of the cutting activities		2	0	2
	PC37.follow standard emergency procedures in case of emergencies		3	1	2
		Total	100	16	84
CSC/N1335 Use basic health and safety	PC1.use protective clothing/equipment for specific tasks and work conditions		4	1	3
practices at the workplace	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	100	3	1	2
	PC4.identify job-site hazardous work and state possible causes of risk or accident in the workplace	100	5	2	3
	PC5.carry out safe working practices while dealing with hazards to ensure the safety of self and others		4	2	2
	PC6.state methods of accident prevention in the work environment of the job role		3	2	1







			1	
PC7.state location of general health and safety equipment in the workplace		5	2	3
PC8.inspect for faults, set up and safely use steps and ladders in general use		5	2	3
PC9.work safely in and around trenches, elevated places and confined areas		5	2	3
PC10.lift heavy objects safely using correct	-	4	2	2
procedures PC11.apply good housekeeping practices at all	_	5	2	3
PC12.identify common hazard signs displayed	_	3	1	2
in various areas PC13.retrieve and/or point out documents that refer to health and safety in the workplace	-	4	1	3
PC14.use the various appropriate fire extinguishers on different types of fires correctly	-	3	1	2
PC15.demonstrate rescue techniques applied during fire hazard		3	1	2
PC16.demonstrate good housekeeping in order to prevent fire hazards		4	1	3
PC17.demonstrate the correct use of a fire extinguisher		4	1	3
PC18.demonstrate how to free a person from electrocution		4	1	3
PC19.administer appropriate first aid to victims where required eg. in case of bleeding, burns, choking, electric shock, poisoning etc.		3	1	2
PC20.demonstrate basic techniques of bandaging		3	1	2
PC21.respond promptly and appropriately to an accident situation or medical emergency in real or simulated environments	-	3	1	2
PC22.perform and organize loss minimization or rescue activity during an accident in real or simulated environments		3	1	2
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		3	1	2
PC24.demonstrate the artificial respiration and the CPR Process		3	1	2
PC25.participate in emergency procedures		4	1	3
PC26.complete a written accident/incident report or dictate a report to another person,		3	1	2
and send report to person responsible				







	PC27.demonstrate correct method to move injured people and others during an emergency		4	2	2
		Total	100	36	64
CSC/N1336 Work effectively with others	PC1.accurately receive information and instructions from the supervisor and fellow workers, getting clarification where required		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	100	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