QUALIFICATIONS PACK - OCCUPATIONAL STANDARDS FOR CAPITAL GOODS INDUSTRY

Contents

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- Draughtsman - Mechanical

SECTOR/S: CAPITAL GOODS

SUB-SECTOR:

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

OCCUPATION: Design

REFERENCE ID: CSC/Q0402

ALIGNED TO: NCO-2004/NIL

Brief Job Description: It involves select the appropriate equipment and drawingsoftware to use based on the type and complexity of the drawing functions tobe carried out and the use of a CAD system linked bills of material, filemanagement and associated customization of installed software including theuse of macros, menus and default settings.

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/Q0402**		
Job Role	**Draughtsman - Mechanical** **[Applicable for National Scenarios]**		
Credits	**TBD**	**Version number**	**1.0**
Sector	**Capital Goods**	**Drafted on**	**14/04/2014**
Sub-sector	**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**	**24/11/2017**
Occupation	**Design**	**Next review date**	**24/11/2021**
NSQC Clearance on	**19/05/2015**		

Job Role	Draughtsman - Mechanical
Role Description	Creation and modification of 2D mechanical engineering designusing CAD system. It also involves the detail drafting of component drawings for manufacturing, assembly, subassembly, installation, etc.
NSQF level	4
Minimum Educational Qualifications **Maximum Educational Qualifications**	10th Standard pass, preferably Not Applicable
Prerequisite License or Training	Computer Aided Design System Training
Minimum Job Entry Age	18 Years
Experience	No Previous Experience Required
Applicable National Occupational Standards (NOS)	**Compulsory:** 1. CSC/N0402 Make or modify 2D mechanical engineering drawings using CAD system 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

Definitions

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.
Technical	Technical knowledge is the specific knowledge needed to accomplish specific

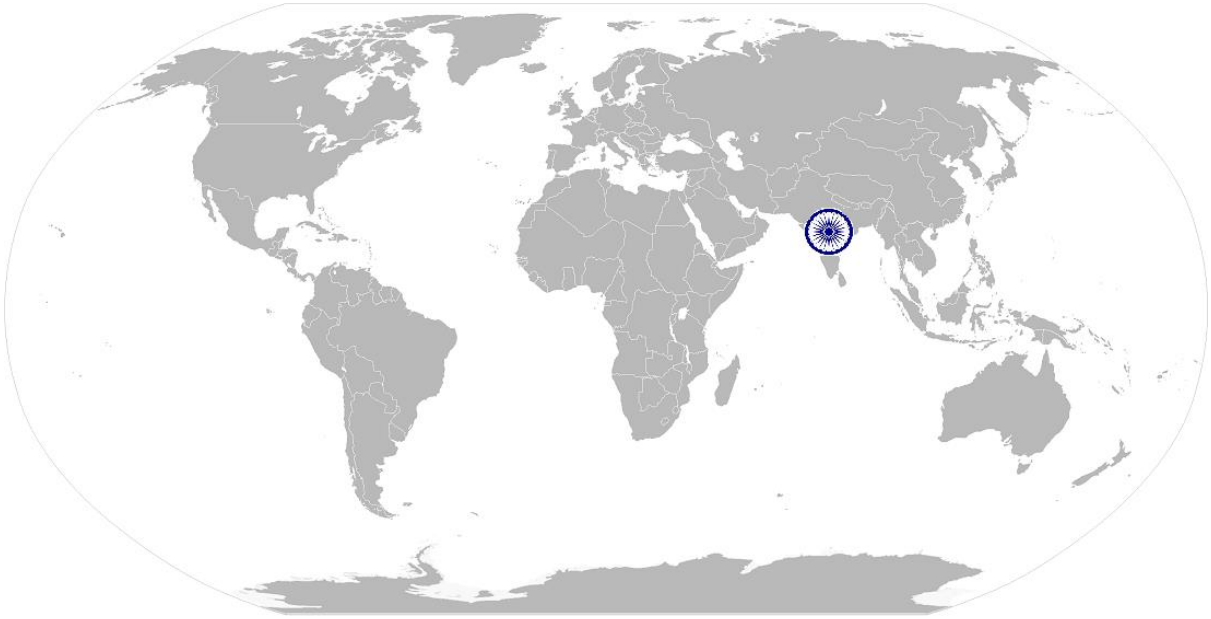
Knowledge	designated responsibilities.
Core Skills/ Generic Skills	Core skills or generic skills are a group of skills that are the key to learning and working in today's world. These skills are typically needed in any work environment in today's world. In the context of the OS, these include communication related skills that are applicable to most job roles.

Acronyms

Keywords/Terms	Description
CNC	Computer Numerically Controlled
CAD	Computer Aided Design
2D	2 Dimensional
3D	3 Dimensional
CO_2	Carbon Dioxide
CPR	Cardiac Pulmonary Resuscitation
ISO	International Organization For Standardization
PPE	Personal Protective Equipment
CD	Compact Disc
DVD	Digital Video Disc Or Digital Versatile Disc

CSC/N0402 Make or modify 2D mechanical engineering drawings using CAD system

National Occupational Standard



Overview

This unit covers the creation and modification of 2D mechanical engineering design using CAD system. It also involves the detail drafting of drawings for manufacturing, assembly, sub-assembly, installation etc.

CSC/N0402 Make or modify 2D mechanical engineeringdrawings using CAD system

National Occupational Standard

Unit Code	**CSC/N0402**
Unit Title (Task)	**Make or modify 2D mechanical engineeringdrawings using CAD system**
Description	This unit covers the skills and knowledge needed to set up and operate a computeraided drawing (CAD) system to produce detailed drawings for engineering activities, inaccordance with approved procedures.
Scope	This unit/task covers the following: • Prepare for 2D mechanical engineering drawings • Perform set-up activities • Make or modify 2D mechanical engineering drawings using CAD system

Performance Criteria(PC) w.r.t. the Scope	
Element	**Performance Criteria**
Prepare for 2D mechanical engineering drawings	To be competent, the user/individual on the job must be able to: PC1. use appropriate sources to obtain the technical information relevant to the drawing to be created Technical information relevant to the drawing to be created: drawing brief; specifications (overall dimensions, materials, special procedures for manufacturing); drawing change or modification request; regulations; existing drawings/designs, sketches, notes from meetings/discussions; standardsreference documents (eg. limits and fits, tapping drill charts, contractionallowances) PC2. identify design features, as appropriate to the drawing being produced Design features: function, materials, clearance, operating environment, quality, aesthetics, interfaces, physical space; tolerances PC3. ensure that the data and information received is complete and correct PC4. establish the drawing requirements from the data and information received PC5. report and rectify incorrect and inconsistent information in job specification documents as per organization procedures PC6. access and use the correct drawing software PC7. select drafting equipment appropriate to the drawing method chosen PC8. check that all the equipment is correctly connected and in a safe and usable working condition PC9. power up the equipment and activate the appropriate drawing software
Perform set-up activities	To be competent, the user/individual on the job must be able to: PC10. customize system variables, menus and drawing defaults to produce the drawing to the appropriate scale PC11. develop macros as per approved procedures PC12. set up and check that all peripheral devices are connected and correctly

CSC/N0402 Make or modify 2D mechanical engineeringdrawings using CAD system

	operating and interface with ERP if required is available Peripheral devices could be: keyboard, mouse, light pen, digitizer/tablet, scanner, printer, plotter, etc. PC13. set the drawing datum at a convenient point PC14. set up drawing parameters (eg. layers, line types, color, text styles) to company procedures or to suit the drawing produced
Make or modify 2D mechanical engineering drawings using CAD system	To be competent, the user/individual on the job must be able to: PC15. interpret and produce mechanical drawings, using first angle orthographic projections, isometric/oblique projections, third angle orthographic projections, sectional views PC16. apply drafting principles to produce various types of drawings that are consistent with applicable standards and procedures for use in various engineering activities Types of drawings: detail drawings, sub-assembly drawings, general arrangement drawings, installation drawings, exploded views Standards and procedures: organizational guidelines and procedures, recognized compliance agency/body standards, directives or codes of practice, CAD software standards/protocols, national and/or International standards or directives, customer standards and requirements, health, safety and environmental requirements Engineering Activities: production activities (such as processing of materials, fabrication, finishing, assembly, joining); installation activities (such as commissioning/decommissioning, site preparation, equipment installation); operational activities (such as movement of materials, workplace layouts, work-flow diagrams), maintenance activities (such as planned preventative maintenance, part/sub-assembly exchange) PC17. create a drawing template to the required standards, which includes all necessary detail (eg.) using various drawing tools Drawing template details: layers of drawings, scale, paper size, color setup, line types, dimension system, title, drawing number, date, text styles Drawing Tools: straight lines, hatching and shading on drawings, adding dimensions and text to drawings, producing layers of drawings, symbols and abbreviations, hidden detail, curved/contour lines, angled lines, circles or ellipses; parts lists, geometrical and dimensional tolerance, insertion of standard components, elevation, plane view, side view, sectional views, detail views PC18. use appropriate terminologies and techniques to create drawings, in the required formats, that are sufficiently and clearly detailed PC19. use keyboard command and pull down menus available in common CAD systems

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	PC20. use codes and other references that follow the required conventions PC21. draw temporary fasteners and rivets PC22. draw components details and assembly drawings PC23. draw piping layouts, gears and machine foundation or base PC24. draw working drawings of jigs and fixtures PC25. draw detailed drawings of dies, moulds and press tools PC26. dimension and label the drawing as per approved procedures PC27. create detailed views using various scales to meet job requirements PC28. ensure that drawings are checked and approved by the appropriate person PC29. produce hard copies of the finished drawings PC30. check that the drawing is correctly titled and referenced; sawing is correctly titled and referenced PC31. save the drawing to an appropriate storage medium (eg. hard drive, CD/DVD, external storage device) PC32. create a separate backup copy and place it in safe storage PC33. identify component parts list with part name, description of part, material specification or part number, quantities and other details to prepare bill of materials as per organizational guidelines PC34. deal promptly and effectively with problems within control and seek help and guidance from the relevant people if you have problems that they cannotresolve PC35. ensure that changes are completed as required by organizational procedures PC36. shut down the CAD system to a safe condition on completion of the drawing activities
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and its processes)	The user/individual on the job needs to know and understand: KA1. legislation, standards, policies, and procedures followed in the company relevant to own employment and performance conditions KA2. relevant health and safety requirements applicable in the work place KA3. importance of working in clean and safe environment KA4. own job role and responsibilities and sources for information pertaining to employment terms, entitlements, job role and responsibilities KA5. reporting structure, inter-dependent functions, lines and procedures in the work area KA6. relevant people and their responsibilities within the work area KA7. escalation matrix and procedures for reporting work and employment relatedissues KA8. documentation and related procedures applicable in the context of employment and work

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	KA9. importance and purpose of documentation in context of employment and work
B. Technical Knowledge	The user/individual on the job needs to know and understand: KB1. organizational procedures and information systems for retrieving and storing drawing data KB2. system variables that can be customized KB3. procedures and need for customizing identified system variables KB4. applicable drafting standards/procedures KB5. procedures and need for customizing menus and system defaults KB6. procedures and need for developing macros KB7. appropriate projection for the drawing purpose KB8. reasons for selecting the chosen projection KB9. reasons for including auxiliary views in drawings KB10. procedures for producing component, layout and/or assembly drawings KB11. drawing specifications KB12. common symbols used in drawings KB13. how and where to obtain the relevant sources and methods for obtaining any required technical information relevant to the drawing KB14. methods and procedures used to minimize the chances of infecting a computer with a virus KB15. procedure to follow in case there are corruptions or virus attacks KB16. practices that make systems vulnerable to corruption and damage KB17. basic set-up and operation of the computer system, and the peripheral devices that are used (eg. light pen, digitizer and tablet, printer or plotter, scanner) KB18. how to access the specific computer drawing software to be used, and the use of software manuals and related documents to aid operation of the relevant drawing system KB19. basic principles of engineering manufacturing operations that are used to produce the drawn item Basic principles of engineering manufacturing operations: casting and forging; fabrication; machining methods; joining processes; assembly and installation methods; limitations of the equipment/processes; kinematics principles relevant to manufacturing of machinery KB20. types of drawings that may be produced by the software KB21. selection of standard components KB22. functionality of the component being drawn, and its interrelationship with other components and assemblies KB23. how to set up the viewing screen to show multiple views of the drawing to help with drawing creation

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	KB24. standards and conventions that are used for the drawings KB25. how to set up the drawing template parameters KB26. application and use of drawing tools KB27. how to access, recognize and use a wide range of standard components and symbol libraries from the CAD equipment KB28. need for document control KB29. how to save and store drawings KB30. need to create backup copies, and to file them in a separate and safe location KB31. how to produce hard copies of the drawings, and the advantages and disadvantages of printers and plotters
Skills (S)	
A. Core Skills/ Generic Skills	**Reading Skills**
	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
	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, and calculations/ formulae Numerical computations: addition, subtraction, multiplication, division, fractions and decimals, percentages and proportions, simple ratios and averages SA4. identify and draw various basic, compound and solid shapes as per dimensions given Basic shapes: square, rectangle, triangle, circle Compound shapes: involving squares, rectangles, triangles, circles, semi-circles, quadrants of a circle Solid shapes: cube, rectangular prism, cylinder SA5. 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 SA6. interpret and express tolerance in terms of limits on dimensions SA7. calculation of the value of angles in a triangle Angles in a triangle: right-angled, isosceles, equilateral
	Oral Communication (Listening and Speaking skills)
	The user/individual on the job needs to know and understand how to:

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	SA8. convey and share technical information clearly using appropriate language SA9. check and clarify task-related information SA10. liaise with appropriate authorities using correct protocol SA11. communicate with people in respectful form and manner in line with organizational protocol
B. Professional Skills	**Decision Making**
	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, 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 situations 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 behavior and their implications SB12. prioritize and plan for problem solving 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

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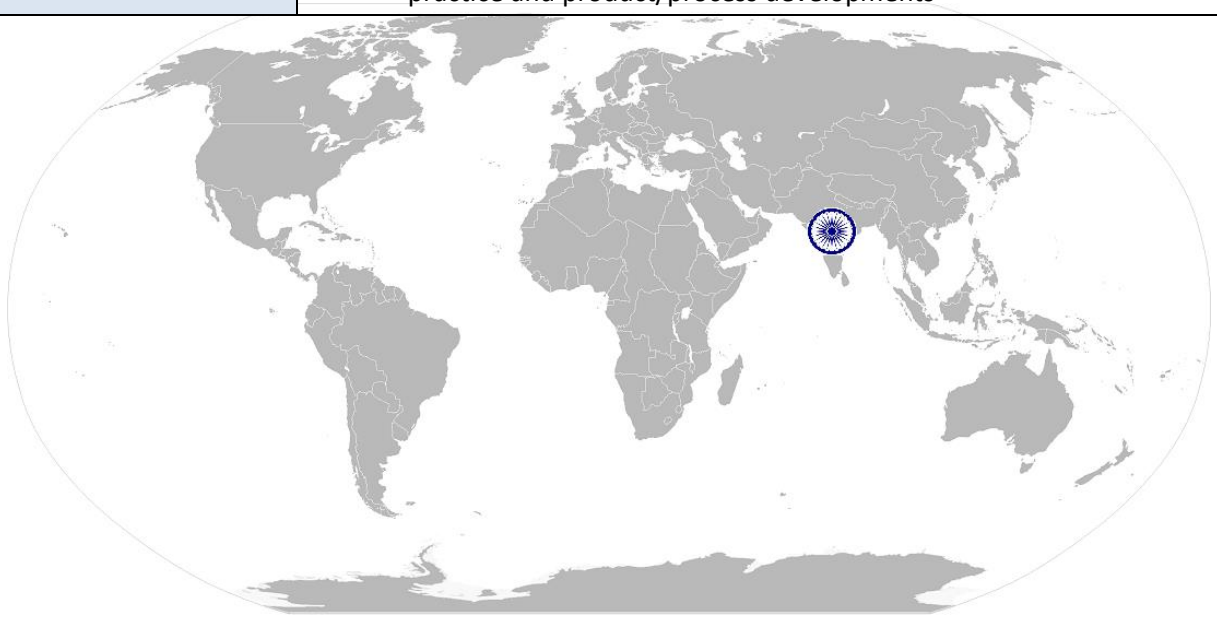
	SB21. participate in improvement procedures including process, quality and internal/external customer/supplier relationships SB22. enhance one's competencies in new and different situations and contexts to achievemore
	Critical Thinking
	The user/individual on the job needs to know and understand how 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



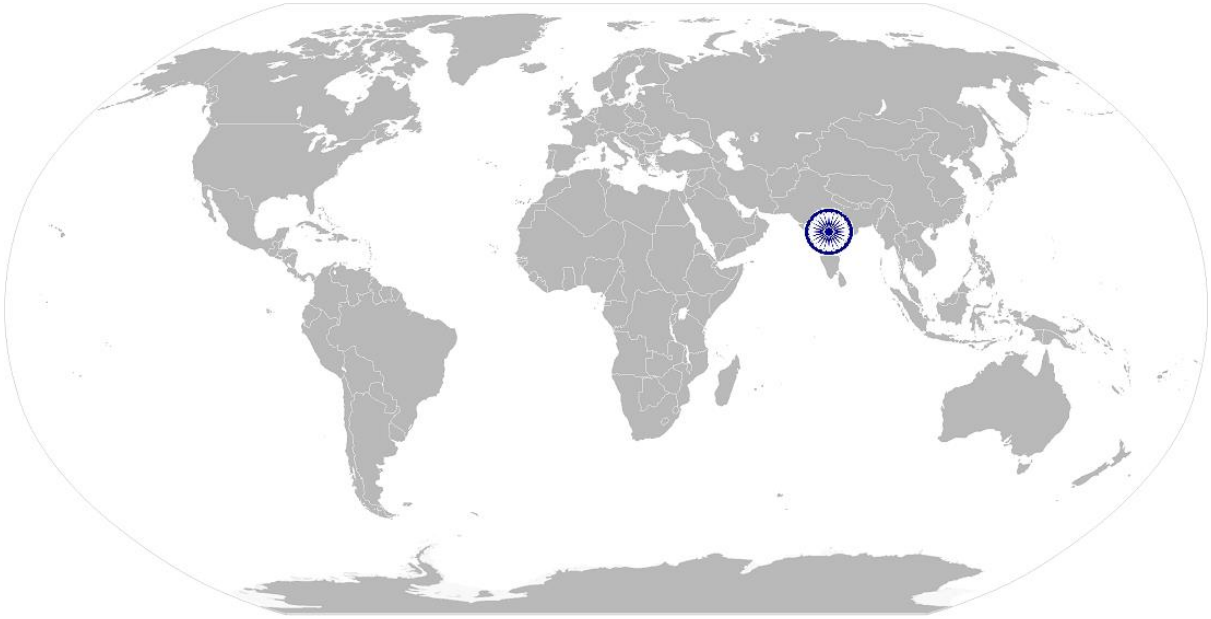
CSC/N0402 Make or modify 2D mechanical engineeringdrawings using CAD system

NOS Version Control

NOS Code	CSC/Q0402		
Credits	TBD	Version number	1.0
Industry	Capital Goods	Drafted on	14/04/2014
Industry Sub-sector	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	24/11/2017
Occupation	Design	Next review date	24/11/2021

CSC/N1335 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

National Occupational Standard

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(PC) w.r.t. the Scope	
Element	**Performance Criteria**
Health and safety	To be competent, the user/individual on the job must be able to: 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

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

	illness) PC5. carry out safe working practices while dealing with hazards to ensure the 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 harness, fall arrestors, etc. 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 and procedures, company notices and documents, legal documents (eg

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

	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 victims where required eg. in case of 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
Knowledge and Understanding (K)	

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

A. Organizational Context (Knowledge of the company / organization and its processes)	The user/individual on the job needs to know and understand: KA1. names (and job titles if applicable), and where to find, all the people responsible for health and safety in a workplace KA2. names and location of documents that refer to health and safety in the workplace
B. Technical Knowledge	The user/individual on the job needs to know and understand: 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 KB15. different methods of extinguishing fire KB16. different materials used for extinguishing fire

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

	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
Skills (S)	
A. Core Skills/ Generic Skills	**Reading Skills**
	The user/ individual on the job needs to know and understand how to: SA1. read and comprehend basic content to 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
	CustomerCentricity
	The user/individual on the job needs to know and understand how to: SB3. remain congenial while discussing and debating issues with co-workers

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

	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

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NOS Version Control

NOS Code	**CSC/N1335**		
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Industry	**Capital Goods**	**Drafted on**	**14/04/2014**
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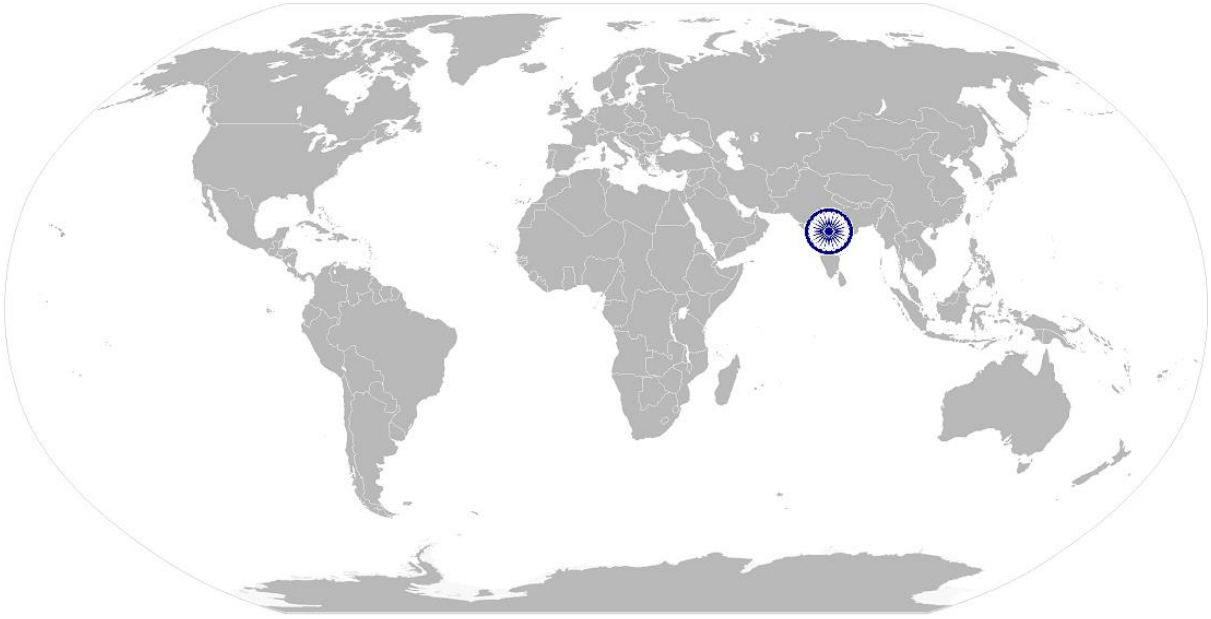
Occupation	**Design**	**Next review date**	**24/11/2021**

CSC/N1336 **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.

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Unit Code	**CSC/N1336**
Unit Title (Task)	**Work effectively with others**
Description	This unit covers basic etiquette and competencies that a candidate is required to possess and demonstrate in their behavior and interactions with others at the workplace. These cover areas such as communication etiquette, discipline, listening etc.
Scope	This unit/task covers the following: • Work effectively with others

Performance Criteria(PC) 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 Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and	The user/individual on the job needs to know and understand: KA1. legislation, standards, policies, and procedures followed in the company relevant to own employment and performance conditions KA2. reporting structure, inter-dependent functions, lines and procedures in the work area

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 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)	
A. Core Skills/ Generic Skills	**ReadingSkills**
	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
	Oral Communication (Listening and Speaking skills)

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	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

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NOS Version Control

NOS Code	**CSC/N1336**		
Credits	**TBD**	**Version number**	**1.0**
Industry	**Capital Goods**	**Drafted on**	**14/04/2014**
Industry Sub-sector	**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**	**24/11/2017**
Occupation	**Design**	**Next review date**	**24/11/2021**

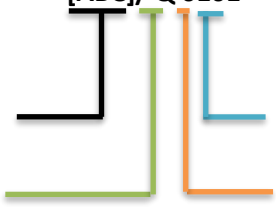
Annexure

Nomenclature for QP and NOS

Qualifications Pack

9 characters

[ABC]/ Q 0101



[Insert 3 letter codes for SSC]

Q denoting Qualifications Pack

QP number (2 numbers)

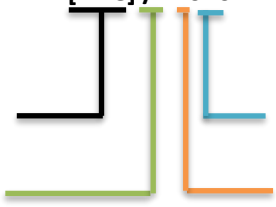
Occupation (2 numbers)

Occupational Standard

An example of NOS with 'N'

9 characters

[ABC] / N 0101



[Insert 3 letter codes for SSC]

N denoting National Occupational Standard

OS number (2 numbers)

Occupation (2 numbers)

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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 **N**OS	N
Next two numbers	Occupation code	01
Next two numbers	OS number	01

Criteria For Assessment Of Trainees

Job Role: Draughtsman - Mechanical
Qualification Pack: CSC/Q0402
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/N0402 Make or modify 2D mechanical engineering drawings using CAD system	PC1. use appropriate sources to obtain the technical information relevant to the drawing to be created	100	2	0	2
	PC2. identify design features, as appropriate to the drawing being produced		4	2	2
	PC3. ensure that the data and information received is complete and correct		2	0	2
	PC4. establish the drawing requirements from the data and information received		3	1	2
	PC5. report and rectify incorrect and inconsistent information in job specification documents as per organization procedures		3	1	2
	PC6. access and use the correct drawing software		2	1	1
	PC7. select drafting equipment appropriate to the drawing method chosen		3	1	2
	PC8. check that all the equipment is correctly connected and in a safe and usable working condition		1	0	1

	PC9. power up the equipment and activate the appropriate drawing software		1	0	1
	PC10. customize system variables, menus and drawing defaults to produce the drawing to the appropriate scale		3	1	2
	PC11. develop macros as per approved procedures		4	2	2
	PC12. set up and check that all peripheral devices are connected and correctly operating and interface with ERP if required is available		2	0	2
	PC13. set the drawing datum at a convenient point		2	0	2
	PC14. set up drawing parameters (eg. layers, line types, color, text styles) to company procedures or to suit the drawing produced		3	1	2
	PC15. interpret and produce mechanical drawings, using first angle orthographic projections, isometric/oblique projections, third angle orthographic projections, sectional views		5	2	3
	PC16. apply drafting principles to produce various types of drawings that are consistent with applicable standards and procedures for use in various engineering activities		5	2	3
	PC17. create a drawing template to the required standards, which includes all necessary detail (eg.) using various drawing tools		5	2	3
	PC18. use appropriate terminologies and techniques to create drawings, in the required formats, that are sufficiently and clearly detailed		4	2	2
	PC19. use keyboard command and pull down menus available in common CAD systems		2	1	1
	PC20. use codes and other references that follow the required conventions		3	1	2
	PC21. draw temporary fasteners and rivets		3	1	2
	PC22. draw components details and assembly drawings		4	1	3
	PC23. draw piping layouts, gears and machine foundation or base		4	1	3
	PC24. draw working drawings of jigs and fixtures		4	1	3
	PC25. draw detailed drawings of dies, moulds and press tools		4	1	3
	PC26. dimension and label the drawing as per approved procedures		4	1	3

	PC27. create detailed views using various scales to meet job requirements		3	1	2
	PC28. ensure that drawings are checked and approved by the appropriate person		1	0	1
	PC29. produce hard copies of the finished drawings		1	0	1
	PC30. check that the drawing is correctly titled and referenced; sawing is correctly titled and referenced		2	0	2
	PC31. save the drawing to an appropriate storage medium (eg. hard drive, CD/DVD, external storage device)		1	0	1
	PC32. create a separate backup copy and place it in safe storage		1	0	1
	PC33. identify component parts list with part name, description of part, material specification or part number, quantities and other details to prepare bill of materials as per organizational guidelines		4	2	2
	PC34. deal promptly and effectively with problems within control and seek help and guidance from the relevant people if you have problems that they cannot resolve		2	0	2
	PC35. ensure that changes are completed as required by organizational procedures		2	1	1
	PC36. shut down the CAD system to a safe condition on completion of the drawing activities		1	0	1
		Total			
CSC/N1335 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		4	2	2
	PC6.state methods of accident prevention in the work environment of the job role		3	2	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 procedures		4	2	2
	PC11.apply good housekeeping practices at all times		5	2	3
	PC12.identify common hazard signs displayed in various areas		3	1	2
	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		4	1	3
	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		4	1	3
	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	2	1
	PC25.participate in emergency procedures		2	1	1
	PC26.complete a written accident/incident report or dictate a report to another person, and send report to person responsible		3	1	2
	PC27.demonstrate correct method to move injured people and others during an emergency		3	1	2
		Total	**100**	**37**	**63**
CSC/N1336 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**