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: Operator – Non-Conventional Electro Discharge Machine(Spark Erosion)

SECTOR: CAPITAL GOODS

SUB-SECTOR: Machine Tools, Plastic Manufacturing Machinery, Die, Moulds and Press Tools, Textile Manufacturing Machinery

OCCUPATION: Machining

REFERENCE ID: CSC/ Q 0119

ALIGNED TO: NCO-2004/NIL

Operator – NC EDM: Perform machining operations on metal products using non-conventional Electro-Discharge Machine(spark erosion), to modify a range of component shapes, as per given specifications.

Brief Job Description: It involves producing machined components that combine a number of different features using a non-conventional Electro discharge Machine (EDM), inspecting the components after machining and continuously monitoring the erosion operations and, where necessary, make minor adjustments in order to ensure that the work output is to the required quality and accuracy.

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

Job Details

Qualifications Pack Code	**CSC/ Q 0119**		
Job Role	**Operator – Non Conventional Electro Discharge Machine (Spark Erosion)**		
Credits (NSQF)	**TBD**	**Version number**	**1.0**
Sector	**CAPITAL GOODS**	**Drafted on**	**10/04/14**
Sub-sector	1. Machine Tools 2. Die, Moulds and Press Tools 3. Plastics Manufacturing Machinery 4. Textile Manufacturing Machinery	**Last reviewed on**	**18/03/15**
Occupation	**MACHINING**	**Next review date**	**30/08/16**
NSQC Clearance on	19/05/2015		

Job Role	Operator Non– Conventional Electro Discharge Machine
Role Description	Perform machining operations on metal products using Non-conventional Electro-Discharge Machine (spark erosion), to modify a range of component shapes, as per given specifications
NSQF level	3
Minimum Educational Qualifications	10th Standard
Maximum Educational Qualifications	N.A.
Training (Suggested but not mandatory)	No Previous Training Required
Minimum Job Entry Age	18 Years Old
Experience	No Previous Experience Required
Applicable National Occupational Standards (NOS)	**Compulsory:** 1. CSC/ N 0119 (Perform machining operations on metal products using non-conventional Electro-Discharge Machine(spark erosion) 2. CSC/ N 1335 (Use basic health and safety practices at the workplace) 3. CSC/ N 1336 (Work effectively with others) **Optional:** N.A.
Performance Criteria	As described in the relevant OS units

Definitions

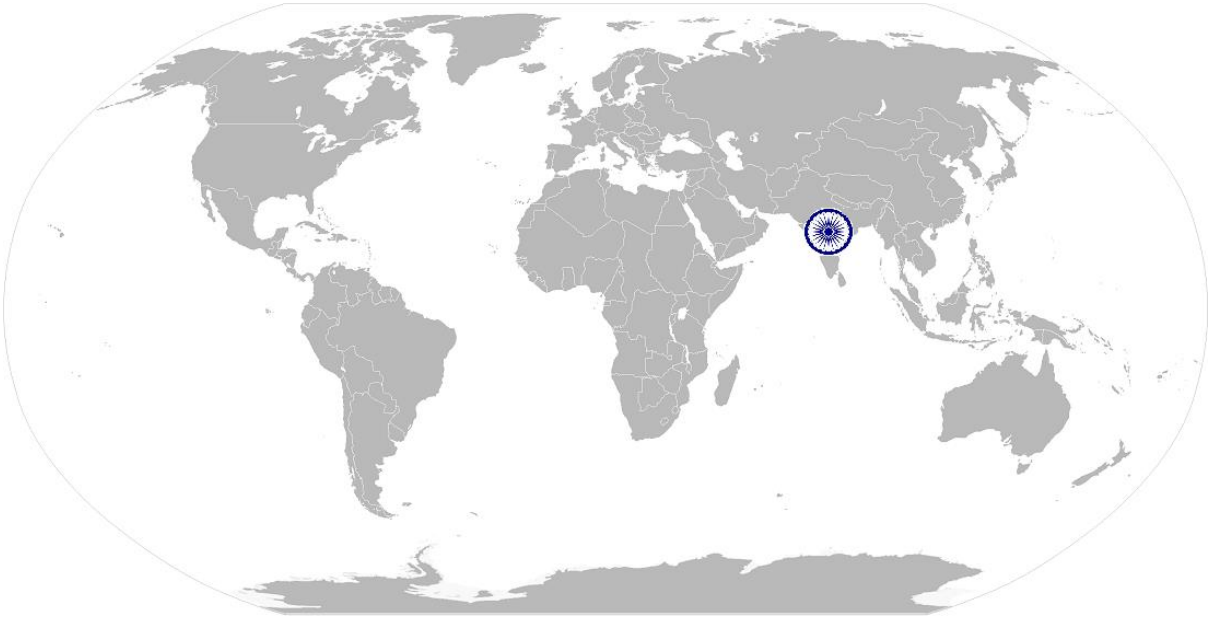
Keywords /Terms	Description
Core Skills/Generic Skills	Core Skills or Generic Skills are a group of skills that are key to learning and working in today's world. These skills are typically needed in any work environment. In the context of the NOS, these include communication related skills that are applicable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

Acronyms

Keywords /Terms	Description
CNC	Computer Numerically Controlled
VMC	Vertical Machining Center
EDM	Electro Discharge Machine
CAD	Computer Aided Design
2D	2 Dimensional
3D	3 Dimensional
PPE	Personal Protective Equipment
VDI	Verein Deutscher Ingenieure, the Society of German Engineers
H Limit	Hard Limit
DTI	Dial Test Indicators
BS/ISO/BS EN/DIN	Quality management standards
CO2	Carbon dioxide
CPR	Cardiac Pulmonary Resuscitation
ISO	International Organization for Standardization

CSC/ N 0119: Perform machining operations on metal products using non-conventional Electro-Discharge Machine(spark erosion)

National Occupational Standard



Overview

This unit covers machining of metal components using a non-conventional electro discharge machine (EDM) to modify a range of component shapes via spark erosion, as per given specifications. It does not cover setting of EDM machines.

CSC/ N 0119: Perform machining operations on metal products using Non-conventional Electro-Discharge Machine (Spark Erosion)

National Occupational Standard

Unit Code	CSC/ N 0119
Unit Title (Task)	**Perform machining operations on metal products using non-conventional Electro-Discharge Machine (Spark Erosion)**
Description	This unit covers machining of metal components using a non-conventional electro discharge machine (EDM) to modify a range of component shapes via spark erosion, as per given specifications. It does not cover setting of EDM machines. The candidate will be required to check that the machine is ready for the operations to be performed, and that all the required components, consumables and measuring equipment is available. The candidate will be required to work under supervision and as per job instructions received, taking responsibility for the quality and productivity of own work.
Scope	This unit/task covers the following: • Working Safely • Preparing machine for operations • Carrying out machining operations on NC EDM

Performance Criteria (PC) w.r.t. the Scope	
Element	**Performance Criteria**
Working Safely	The user/individual on the job should be able to: PC1. comply with health and safety, environmental and other relevant regulations and guidelines at work PC2. adhere to procedures and guidelines for personal protective equipment (PPE) and other relevant safety regulations while performing operations PC3. work following laid down procedures and instructions PC4. ensure work area is clean and safe from hazards PC5. ensure that all tools, equipment, power tool cables, extension leads are in a safe and usable condition PC6. ensure that machine guards are in place and are correctly adjusted
Preparing machine for operations	The user/individual on the job should be able to: PC7. conduct a preliminary check of the readiness of the electro discharge machine **Electro discharge machines**: Spark Erosion **Preliminary checks:** machine is clean; position and alignment of the workpiece; lubrication is functioning; coolant level is correct; sub-systems are working correctly; confirmation received from the machine setter that the machine is ready for production PC8. obtain job specification from a valid and approved source **Valid sources**: job instruction sheet/job card; work drawings and instructions; planning documentation; quality control documents; operation sheets; process specifications; instructions from supervisor PC9. read and establish job requirements from the job specification document accurately **Job specification documents**: detailed component drawings; approved sketches/illustrations; national, international and organisational standards;

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	reference tables and charts; operational diagrams PC10. report and rectify incorrect and inconsistent information in job specification documents as per organization procedures PC11. prepare the work area for the machining operations as per procedure or operational specification PC12. ensure that all measuring equipment is calibrated and approved for usage PC13. ensure that the components used are free from foreign objects, dirt or other contamination PC14. obtain correct workpieces/raw materials and consumables as per job requirements PC15. obtain appropriate measuring, marking tools and equipment as per job requirements **Measuring and marking tools**: protractor; depth/internal/external micrometers; calipers (vernier, inside and outside, depth); gauges (height Vernier, feeler, bore/hole, slip, radius/profile, thread, plug); stick micrometers; dial stand and comparator; vee block with u-clamp PC16. set work pieces as per job requirements using appropriate positioning and/or holding devices and support mechanisms **Positioning and holding devices**: clamping direct to machine table; pneumatic or magnetic table; machine vice (eg. plain, swivel, universal); angle plate; vee block and clamps; fixtures; chucks (eg. 3 or 4 jaw); auxilliary indexing device
Carrying out machining operations on NC EDM	The user/individual on the job should be able to: PC17. manipulate the machine tool controls safely and correctly in line with operational procedures PC18. obtain and use the appropriate documentation (eg. job instructions, drawings, quality control documentation) PC19. ensure that machine settings are adjusted as and when required to maintain the required accuracy PC20. produce component shapes on a range of materials with various mechanical properties **Range of materials**: Ferrous: eg. low, medium and high carbon steels; low alloy steels; stainless steels; cast irons; Non-ferrous: eg. aluminum and aluminum alloys, bronze, silicon carbide **Mechanical properties**: tensile strength, toughness, hardness, elasticity, ductility, malleability PC21. produce machined components with the required features **Features**: flat; parallel and angular faces; forms(concave and convex, square/rectangular, profile); holes; cavities; slots; engraving; radii/arcs PC22. produce components with dimensional accuracy, form and surface finish within all the relevant quality and accuracy standards as is applicable to the operations performed **Accuracy standards**: components to be free from damage, false tool cuts, burrs, scratches and non-specified sharp edges; general dimensional tolerance +/- 0.020mm; flatness and squareness 0.05mm; angles within +/- 1

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	degree PC23. check the quality of the output as per required standards using visual checks and measurement of dimensional parameters **Dimensional parameters**: parallelism, angle/taper, squareness, surface texture, linear dimensions, flatness, depths, angles, profiles, hole position, hole size/fit PC24. complete documentation during and post operations as per organizational procedures **Documentation**: job card, progress records, incident reports PC25. return all tools and equipment to the correct location on completion of the fitting activities PC26. leave the work area in a safe and tidy condition on completion of job activities PC27. carry out sampling checks at suitable intervals PC28. ensure that the components produced meet the required specification for quality and accuracy PC29. use appropriate gauges or instruments to carry out the necessary checks, during production, for testing accuracy parameters **Accuracy parameters**: dimensions, parallelism, angle/taper, squareness, surface texture, profile PC30. deal promptly and effectively with problems within span of responsibility and control and report those that cannot be solved
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 related issues KA8. documentation and related procedures applicable in the context of employment and work KA9. importance and purpose of documentation in context of employment and work

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B. Technical Knowledge	The user/individual on the job needs to know and understand: KB1. specific safe working practices and procedures to be followed whilst operating electro discharge machines **Electro discharge machines**: Spark Erosion **Safety precautions**: obtain and use the appropriate documentation (eg. job instructions, drawings, quality control documentation); adhere to procedures or systems in place for risk assessment, Personal Protective Equipment and other relevant safety regulations and procedures to realize a safe system of work; follow safe practice/approved setting up procedures at all times; ensure that correctly adjusted machine guards are in place; check that electrodes are in a suitable condition; hold components securely without distortion; leave the work area and machine in a safe and appropriate condition on completion of the activities KB2. hazards associated with the electro discharge machining operations (eg: moving machine parts, electrical components, handling dielectrics, fumes), and how they can be minimized KB3. safety mechanisms on the machine, and the procedure for checking that they function correctly KB4. operation of the machine controls in both hand and power modes (including rapid power, where appropriate) KB5. how to stop the machine in both normal and emergency situations, and the procedure for restarting after an emergency KB6. personal protective equipment to be worn and where this can be obtained KB7. importance of keeping the work area clean and tidy KB8. where to obtain the component drawings, specifications and/or job instructions required for the components to be machined KB9. information on engineering drawings and related specifications (to include symbols and conventions to appropriate BS or ISO standards in relation to work undertaken) KB10. imperial and metric systems of measurement KB11. main features, accessories and specifications of the electro discharge machine being used **Machine specifications**: e.g. electrical conditions (eg. current density, spark frequency); alignment of electrodes; filtration equipment; linear feeds and speeds; dielectric flow rates; ventilation and fume extraction; safety mechanisms/devices; maximum weight carrying capacity; etc. KB12. various erosion operations that can be performed (methods and equipment used) KB13. effects of backlash in machine slides and screws and how this can be overcome KB14. various types of materials used for electrodes **Materials**: copper, tungsten copper, graphite **Electrodes**: plain electrodes, profile electrodes, hollow electrodes KB15. safe and correct handling and storing of electrodes KB16. importance of spark gap KB17. sparking and arcing in EDM machining and the course of action if it takes

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	place KB18. importance of flushing and flow of EDM oil KB19. importance of +/- polarity KB20. application of roughing and finishing cuts and the effect on electrode life, surface finish and dimensional accuracy KB21. application of dielectric fluid with regard to a range of different materials KB22. effects of clamping the workpiece in a chuck/workholding device, and how this can cause distortion in the finished components KB23. how to recognise machining faults, and how to identify when electrodes need changing KB24. quality control procedures used, inspection checks to be carried out, and the equipment that will need to be used KB25. problems that can occur with the electro discharge machining activities, and how these can be overcome KB26. technical parameters for different machines
Skills (S) [Optional]	
A. Core Skills/ Generic Skills	**Communication**
	The user/ individual on the job needs to know and understand how to: SA1. read and interpret information correctly from various job specification documents, manuals, health and safety instructions, memos, etc. applicable to the job in English and/or local language SA2. fill up appropriate technical forms, process charts, activity logs as per organizational format in English and/or local language SA3. convey and share technical information clearly using appropriate language SA4. check and clarify task-related information SA5. liaise with appropriate authorities using correct protocol SA6. communicate with people in respectful form and manner in line with organizational protocol
	Numerical and computational skills
	The user/individual on the job needs to know and understand how to: SA7. undertake numerical operations, and calculations/ formulae **Numerical computations**: addition, subtraction, multiplication, division, fractions and decimals, percentages and proportions, simple ratios and averages SA8. identify 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 SA9. use appropriate measuring techniques and units of measurement SA10. 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 quantityinterpret and express tolerance in terms of limits on dimensions SA11. calculation of the value of angles in a triangle

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	SA12. use Pythagoras theorem for calculations
	Learning
	The user/individual on the job needs to know and understand how to: SA13. maintain current knowledge of applicable standards, legislation, codes of practice and product/process developments SA14. participate in on-the-job and other learning, training and development interventions and assessment SA15. clarify task related information with appropriate personnel or technical adviser SA16. seek to improve and modify own work practices
B. Professional Skills	**Problem Solving**
	The user/individual on the job needs to know and understand how to: SB1. identify problems with work planning, procedures, output and behavior and their implications SB2. prioritize and plan for problem solving SB3. communicate problems appropriately to others SB4. identify sources of information and support for problem solving SB5. seek assistance and support from other sources to solve problems SB6. identify effective resolution techniques SB7. select and apply resolution techniques SB8. seek evidence for problem resolution
	Plan and Organize
	The user/individual on the job needs to know and understand how to: SB9. plan, prioritize and sequence work operations as per job requirements SB10. organize and analyze information relevant to work SB11. basic concepts of shop-floor work productivity including waste reduction, efficient material usage and optimization of time
	Initiative and Enterprise
	The user/individual on the job needs to know and understand how to: SB1. undertake and express new ideas and initiatives to others SB2. modify work plan to overcome unforeseen difficulties or developments that occur as work progresses SB3. participate in improvement procedures including process, quality and internal/external customer/supplier relationships SB4. one's competencies in new and different situations and contexts to achieve more
	Self-Management
	The user/individual on the job needs to know and understand how to: SB5. exercise restraint while expressing dissent and during conflict situations SB6. avoid and manage distractions to be disciplined at work

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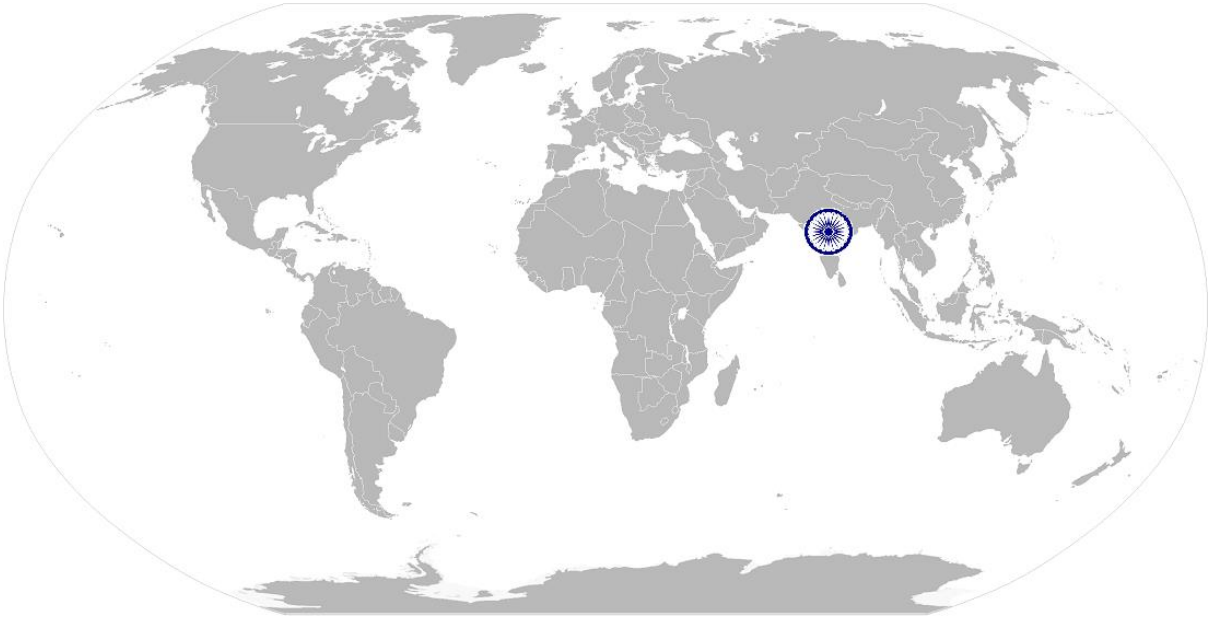
	SB7. Manage own time for achieving better results
	Teamwork
	The user/individual on the job needs to know and understand how to: SB8. work in a team in order to achieve better results SB9. identify and clarify work roles within a team SB10. communicate and cooperate with others in the team for better results SB11. seek assistance from fellow team members



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NOS Version Control

NOS Code	CSC/ N 0119		
Credits (NSQF)	TBD	Version number	1.0
Industry	Capital Goods	Drafted on	10/04/14
Industry Sub-sector	1. Machine Tools 2. Dies, Moulds and Press Tools 3. Plastics Manufacturing Machinery 4. Textile Manufacturing Machinery	Last reviewed on	18/03/15
Occupation	Machining	Next review date	30/08/16

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

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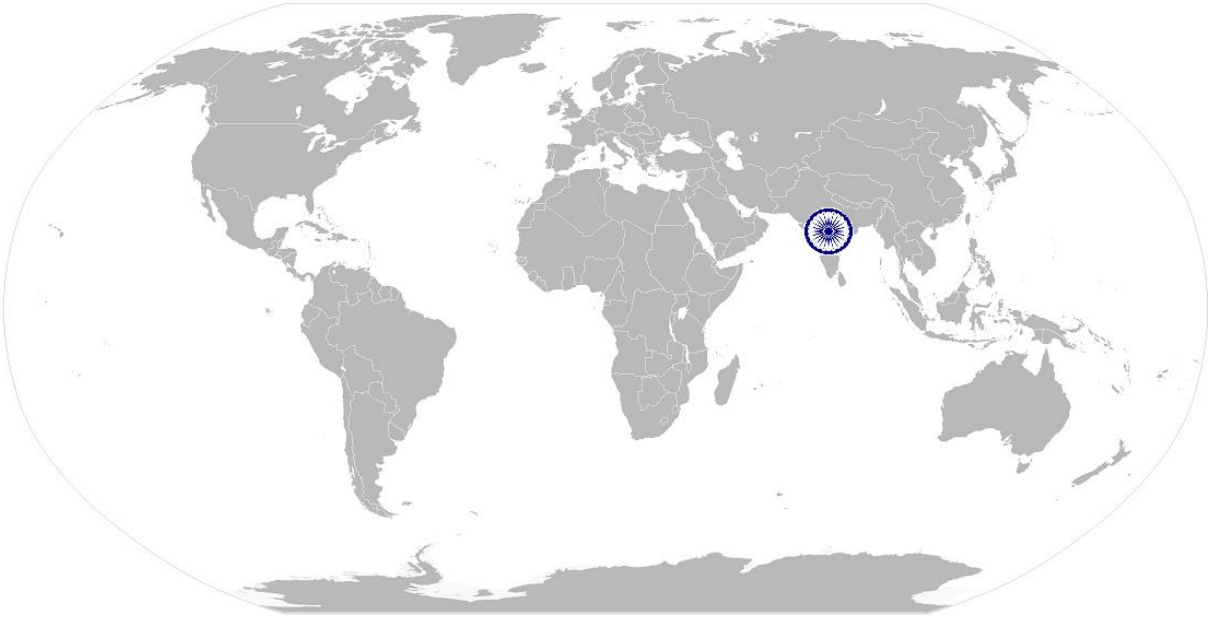
National Occupational Standard



Overview

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

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

National Occupational Standard

Unit Code	CSC / N 1335
Unit Title (Task)	**Use basic health and safety practices at the workplace**
Description	This OS unit is about knowledge and practices relating to health, safety and security that candidates need to use in the workplace. It covers responsibilities towards self, others, assets and the environment. It includes understanding of risks and hazards in the workplace, along with common techniques to minimize risk, deal with accidents, emergencies, etc. It covers knowledge of fire safety, common first aid applications, safe practices and emergency procedures.
Scope	This unit/task covers the following: • Health and safety • Fire safety • Emergencies, rescue and first-aid procedures
Performance Criteria(PC) w.r.t. the Scope	
Element	**Performance Criteria**
Health and safety	The user/individual on the job should 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.)

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

	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) 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

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

	Documents: fire notices, accident reports, safety instructions for equipment and procedures, company notices and documents, legal documents (eg government notices)
Fire safety	The user/individual on the job should 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	The user/individual on the job should 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/ N 1335: Use basic health and safety practices at the workplace

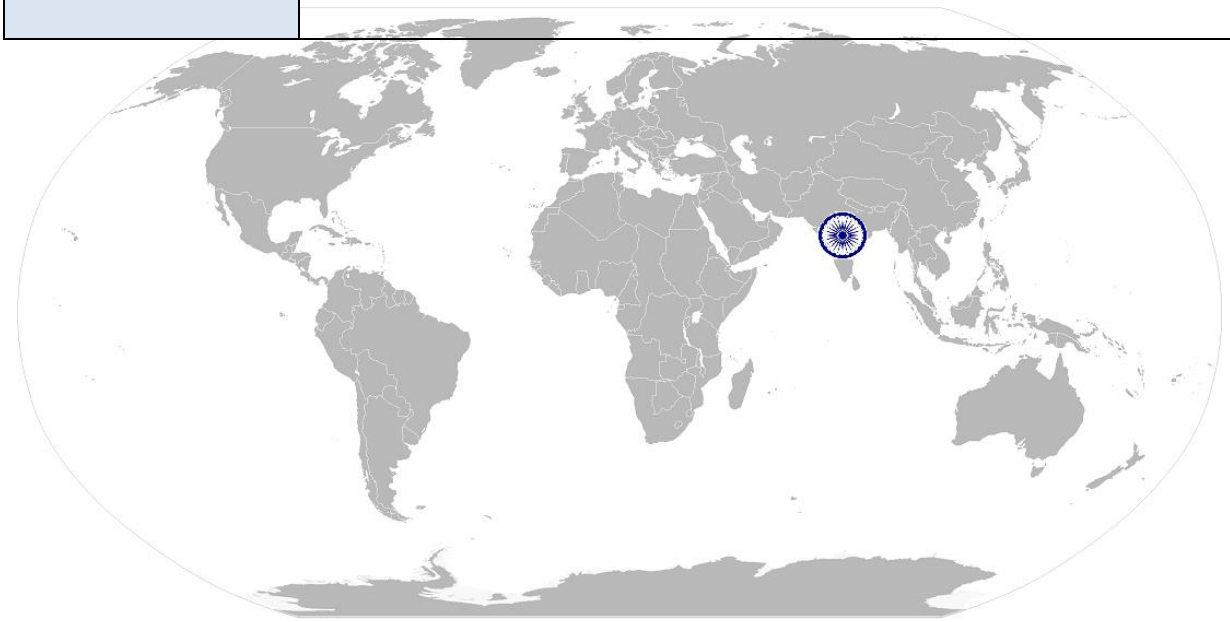
A. Organizational Context (Knowledge of the company / organization and its processes)	The user/individual on the job needs to know and understand: KA1. names (and job titles if applicable), and where to find, all the people responsible for health and safety in a workplace. KA2. names and location of 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 **Materials**: sand, water, foam, CO2, dry powder KB17. rescue techniques applied during a fire hazard KB18. various types of safety signs and what they mean

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

	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) [Optional]	
A. Core Skills/ Generic Skills	**Reading and Writing Skills**
	The user/individual on the job needs to know and understand how to: SA1. read and comprehend basic content to read labels, charts, signages SA2. read and comprehend basic English to read manuals of operations SA3. read and write an accident/incident report in local language or English
	Oral Communication (Listening and Speaking skills)
	The user/individual on the job needs to know and understand how to: SA4. question coworkers appropriately in order to clarify instructions and other issues SA5. give clear instructions to coworkers, subordinates others
	Decision Making
	The user/individual on the job needs to know and understand how to: SA6. make appropriate decisions pertaining to the concerned area of work with respect to intended work objective, span of authority, responsibility, laid down procedure and guidelines
B. Professional Skills	**Plan and Organize**
	The user/individual on the job needs to know and understand how to: SB1. plan and organize their own work schedule, work area, tools, equipment and materials to maintain decorum and for improved productivity
	Working with others
	The user/individual on the job needs to know and understand how to: SB2. remain congenial while discussing and debating issues with co-workers SB3. follow appropriate protocols for communication based on situation, hierarchy, organizational culture and practice SB4. ask for, provide and receive required assistance where possible to ensure achievement of work related objectives SB5. thank coworkers for any assistance received SB6. offer appropriate respect based on mutuality and respect for fellow worksmanship and authority

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

	Problem Solving
	The user/individual on the job needs to know and understand how to: SB7. think through the problem, evaluate the possible solution(s) and suggest an optimum /best possible solution(s) SB8. identify immediate or temporary solutions to resolve delays SB9. identify sources of support that can be availed of for problem solving for various kind of problems SB10. seek appropriate assistance from other sources to resolve problems SB11. report problems that you cannot resolve to appropriate authority
	Analytical Thinking
	The user/individual on the job needs to know and understand how to: SB12. identify cause and effect relations in their area of work SB13. use cause and effect relations to anticipate potential problems and their solution



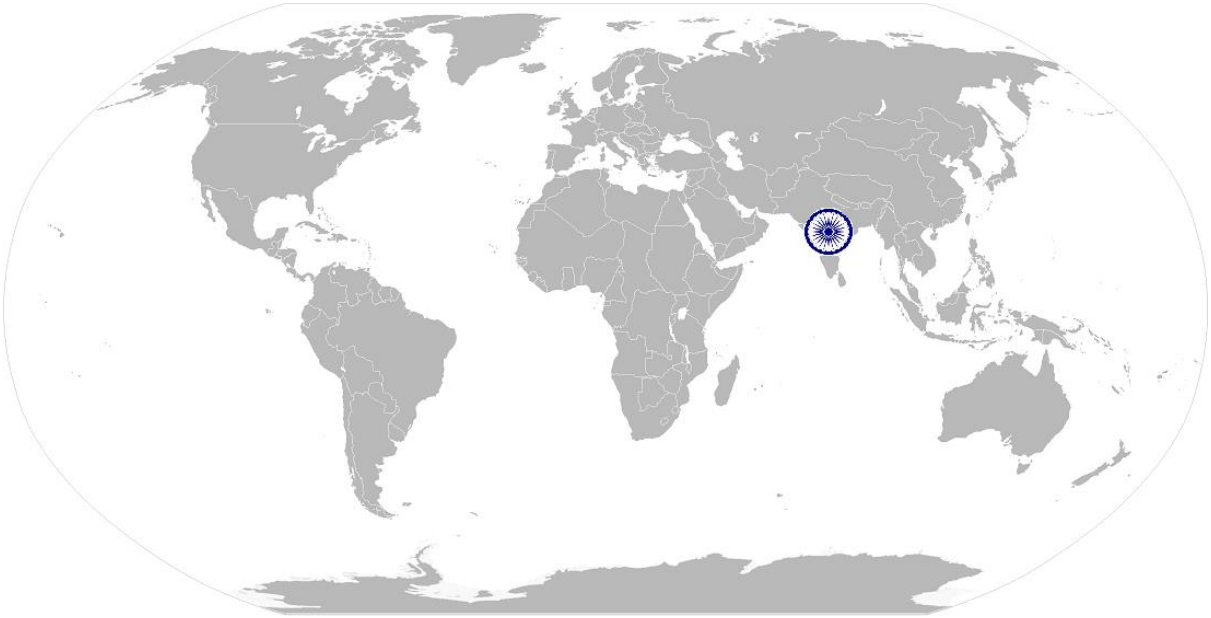
CSC/ N 1335: Use basic health and safety practices at the workplace

NOS Version Control

NOS Code	CSC / N 1335		
Credits (NSQF)	TBD	Version number	1.0
Industry	Capital Goods	Drafted on	10/04/14
Industry Sub-sector	1. Machine Tools 2. Dies, Moulds And Press Tools 3. Plastics Manufacturing Machinery 4. Textile Manufacturing Machinery 5. Process Plant Machinery 6. Electrical and Power Generation Machinery 7. Light Engineering Goods	Last reviewed on	18/03/15
Occupation	Machining	Next review date	30/08/16

CSC/ N 1336: Work effectively with others

National Occupational Standard



Overview

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

National Occupational Standard

CSC/ N 1336: Work effectively with others

Unit Code	**CSC / N 1336**
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, handling conflict and grievances.
Scope	This unit/task covers the following: • Working with others

Performance Criteria (PC) w.r.t. the Scope

Element	Performance Criteria
Working with others	The user/individual on the job should be able to: PC1. accurately receive information and instructions from the supervisor and fellow workers, getting clarification where required PC2. accurately pass on information to authorized persons who require it and within agreed timescale and confirm its receipt PC3. 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 its processes)	The user/individual on the job needs to know and understand: KA1. legislation, standards, policies, and procedures followed in the company relevant to own employment and performance conditions KA2. reporting structure, inter-dependent functions, lines and procedures in the work area KA3. relevant people and their responsibilities within the work area KA4. escalation matrix and procedures for reporting work and employment related issues

CSC/ N 1336: Work effectively with others

B. Technical Knowledge	The user/individual on the job needs to know and understand: KB1. various categories of people that one is required to communicate and co-ordinate with in the organization KB2. importance of effective communication in the workplace KB3. importance of teamwork in organizational and individual success KB4. various components of effective communication KB5. key elements of active listening KB6. value and importance of active listening and assertive communication KB7. barriers to effective communication KB8. importance of tone and pitch in effective communication KB9. importance of avoiding casual expletives and unpleasant terms while communicating professional circles KB10. how poor communication practices can disturb people, environment and cause problems for the employee, the employer and the customer KB11. importance of ethics for professional success KB12. importance of discipline for professional success KB13. what constitutes disciplined behavior for a working professional KB14. common reasons for interpersonal conflict KB15. importance of developing effective working relationships for professional success KB16. expressing and addressing grievances appropriately and effectively KB17. importance and ways of managing interpersonal conflict effectively
Skills (S) [Optional]	

CSC/ N 1336: **Work effectively with others**

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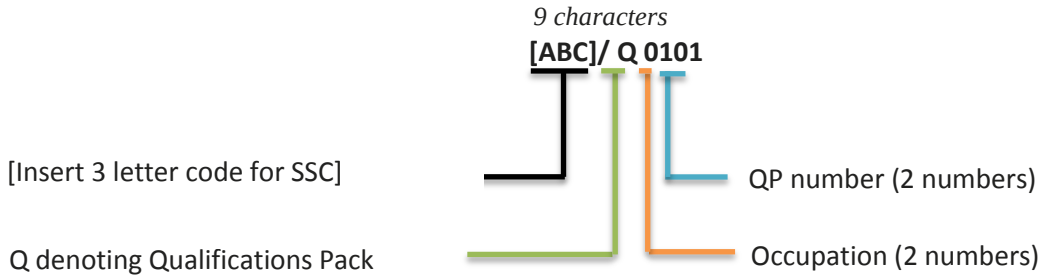
Annexure

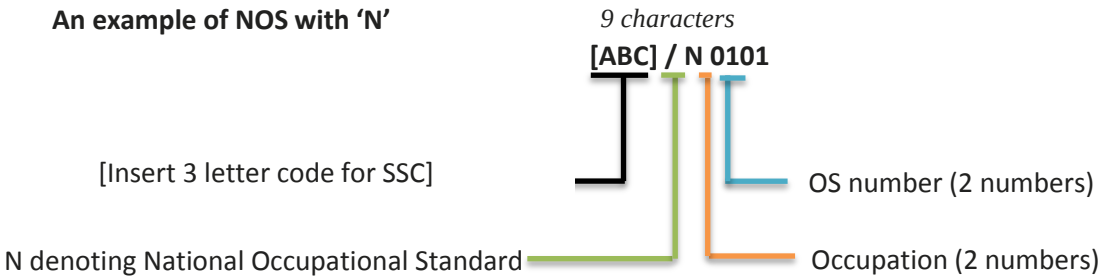
Nomenclature for QP and NOS

Qualifications Pack



Occupational Standard

An example of NOS with 'N'



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

Sub-sector	Range of Occupation numbers
Machine Tools	01-13
Dies, Moulds and Press Tools	01-13
Plastics 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	**Non-Conventional Electro Discharge Machine (Spark Erosion)**
Qualification Pack	**CSC/ Q 0119**
Sector Skill Council	**Capital Goods Sector Skills Council**

Guidelines for Assessment:

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC.
2. The assessment for the theory part will be based on knowledge bank of questions created by the SSC.
3. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training centre (as per assessment criteria below)
4. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training centre based on this criteria
5. To pass the Qualification Pack , every trainee should score a minimum of 70% in every NOS
6. In case of successfully passing only certain number of NOS's, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack.

Assessable Outcomes	Assessment Criteria	Total Marks	Out of	Theory	Practical Skill
CSC/ N 0119: Perform machining operations on metal products using Non-conventional Electro-Discharge Machine (Spark Erosion)	PC1. comply with health and safety, environmental and other relevant regulations and guidelines at work	**100**	3	1	2
	PC2. adhere to procedures and guidelines for personal protective equipment (PPE) and other relevant safety regulations while performing operations		4	1	3
	PC3. work following laid down procedures and instructions		3	1	2
	PC4. ensure work area is clean and safe from hazards		2	0	2
	PC5. ensure that all tools, equipment, power tool cables, extension leads are in a safe and usable condition		2	0	2
	PC6. ensure that machine guards are in place and are correctly adjusted		2	0	2
	PC7. conduct a preliminary check of the readiness of the electro discharge machine		3	0	3
	PC8. obtain job specification from a valid and approved source		2	0	2

	PC9. read and establish job requirements from the job specification document accurately		3	0	3
	PC10. report and rectify incorrect and inconsistent information in job specification documents as per organization procedures		4	1	3
	PC11. prepare the work area for the machining operations as per procedure or operational specification		4	1	3
	PC12. ensure that all measuring equipment is calibrated and approved for usage		2	0	2
	PC13. ensure that the components used are free from foreign objects, dirt or other contamination		2	0	2
	PC14. obtain correct workpieces/raw materials and consumables as per job requirements		3	1	2
	PC15. obtain appropriate tools and equipment as per job requirements		3	1	2
	PC16. set work pieces as per job requirements using appropriate positioning and/or holding devices and support mechanisms		5	1	4
	PC17. manipulate the machine tool controls safely and correctly in line with operational procedures		6	2	4
	PC18. obtain and use the appropriate documentation (eg. job instructions, drawings, quality control documentation)		2	0	2
	PC19. ensure that machine settings are adjusted as and when required to maintain the required accuracy		3	0	3
	PC20. produce component shapes on a range of materials		4	0	4
	PC21. produce machined components with the required features		4	0	4

	PC22. produce components with dimensional accuracy, form and surface finish within all the relevant quality and accuracy standards as is applicable to the operations performed		6	2	4
	PC23. check the quality of the output as per required standards using visual checks and measurement of dimensional parameters		5	1	4
	PC24. complete documentation during and post operations as per organizational procedures		3	1	2
	PC25. return all tools and equipment to the correct location on completion of the fitting activities		2	0	2
	PC26. leave the work area in a safe and tidy condition on completion of job activities		2	0	2
	PC27. carry out sampling checks at suitable intervals		4	0	4
	PC28. ensure that the components produced meet the required specification for quality and accuracy		3	1	2
	PC29. use appropriate gauges or instruments to carry out the necessary checks, during production, for testing accuracy parameters		5	1	4
	PC30. deal promptly and effectively with problems within span of responsibility and control and report those that cannot be solved		4	0	4
			100	**16**	**84**
CSC/ N 1335 (Use basic health and safety practices at the workplace)	PC1. use protective clothing/equipment for specific tasks and work conditions	**100**	5	2	3
	PC2. state the name and location of people responsible for health and safety in the workplace		3	1	2
	PC3. state the names and location of documents that refer to health and safety in the		3	1	2

	workplace				
	PC4. identify job-site hazardous work and state possible causes of risk or accident in the workplace		5	2	3
	PC5. carry out safe working practices while dealing with hazards to ensure the safety of self and others state methods of accident prevention in the work environment of the job role		4	2	2
	PC6. state location of general health and safety equipment in the workplace		3	2	1
	PC7. inspect for faults, set up and safely use steps and ladders in general use		5	2	3
	PC8. work safely in and around trenches, elevated places and confined areas		5	2	3
	PC9. lift heavy objects safely using correct procedures		5	2	3
	PC10. apply good housekeeping practices at all times		4	2	2
	PC11. identify common hazard signs displayed in various areas		5	2	3
	PC12. retrieve and/or point out documents that refer to health and safety in the workplace		3	1	2
	PC13. use the various appropriate fire extinguishers on different types of fires correctly		4	1	3
	PC14. demonstrate rescue techniques applied during fire hazard		4	1	3
	PC15. demonstrate good housekeeping in order to prevent fire hazards		3	1	2
	PC16. demonstrate the correct use of a fire extinguisher		4	1	3
	PC17. demonstrate how to free a person from electrocution		4	1	3
	PC18. administer appropriate first aid to victims where required eg. in case of bleeding, burns, choking, electric shock, poisoning etc.		4	1	3

	PC19. demonstrate basic techniques of bandaging		3	1	2
	PC20. respond promptly and appropriately to an accident situation or medical emergency in real or simulated environments		4	1	3
	PC21. perform and organize loss minimization or rescue activity during an accident in real or simulated environments		3	1	2
	PC22. administer first aid to victims in case of a heart attack or cardiac arrest due to electric shock, before the arrival of emergency services in real or simulated cases		3	1	2
	PC23. demonstrate the artificial respiration and the CPR Process		3	1	2
	PC24. participate in emergency procedures		3	2	1
	PC25. complete a written accident/incident report or dictate a report to another person, and send report to person responsible		4	1	3
	PC26. demonstrate correct method to move injured people and others during an emergency		4	1	3
		Total	100	36	64
CSC/ N 1336 (Work effectively with others)	PC1. accurately receive information and instructions from the supervisor and fellow workers, getting clarification where required	**100**	10	3	7
	PC2. accurately pass on information to authorized persons who require it and within agreed timescale and confirm its receipt		10	3	7
	PC3. give information to others clearly, at a pace and in a manner that helps them to understand		10	3	7
	PC4. display helpful behavior by assisting others in performing tasks in a positive manner, where required and possible		10	3	7

	PC5. consult with and assist others to maximize effectiveness and efficiency in carrying out tasks		10	3	7
	PC6. display appropriate communication etiquette while working		10	3	7
	PC7. display active listening skills while interacting with others at work		10	3	7
	PC8. use appropriate tone, pitch and language to convey politeness, assertiveness, care and professionalism		10	3	7
	PC9. demonstrate responsible and disciplined behaviors at the workplace		10	3	7
	PC10. escalate grievances and problems to appropriate authority as per procedure to resolve them and avoid conflict		10	3	7
		Total	100	30	70