



Qualification Pack

IIoT Data Analytics Engineer

QP Code: CSC/Q0504

Version: 1.0

NSQF Level: 5.5

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CSC/Q0504: IIoT Data Analytics Engineer

Brief Job Description

IIoT Data Analytics Engineer facilitate in installation, configuring and connects disruptive sensors and other devices in the industrial IIoT network using LoRaWAN technology, specified optical fibre cables and connectors. He/she develop expertise in data collecting, cleaning, formatting, conditional formatting, data visualization, data consolidation, commissioning and troubleshooting of IIoT systems. The individual skilled engineers can assemble and test simple devices and systems through device prototypes.

Personal Attributes

This job requires the individual to be inquisitive in gaining knowledge, detail oriented and thorough. Is meticulous in understanding the detailed requirements and plans the installation work to achieve zero fault results through verification. Has ability to learn new-age technologies and methods quickly.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. [CSC/N0510: Perform Installation and Configuration of IIoT devices and Products](#)
2. [CSC/N0516: Collate and analyze Data arising out of a manufacturing process](#)
3. [CSC/N0511: Facilitate in Commissioning and Troubleshooting of IIoT systems](#)
4. [CSC/N0512: Assemble and Test Prototype IoT devices](#)
5. [CSC/N1339: Collaboratively coordinate with the team](#)
6. [CSC/N0505: Follow health, safety and environment guidelines at workplace](#)
7. [DGT/VSQ/N0102: Employability Skills \(60 Hours\)](#)

Qualification Pack (QP) Parameters

Sector	Capital Goods
Sub-Sector	Machine Tools, Dies, Moulds and Press Tools, Plastics Manufacturing Machinery, Textile Manufacturing Machinery, Process Plant Machinery, Electrical and Power Machinery, Light Engineering Goods, Defence Equipment, Fire-Fighting & Safety Equipment

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Occupation	Service
Country	India
NSQF Level	5.5
Credits	19
Aligned to NCO/ISCO/ISIC Code	NCO/2015
Minimum Educational Qualification & Experience	UG in relevant field (UG Degree in relevant field + 3 years of relevant experience or 3/ 4 years UG B,Sc., BE, B.Tech (Electrical, Electronics, Mechanical, Mechatronics, Instrumentation and Control)* or 10+3 years Diploma in relevant field + 5 year of relevant experience or Previous NSQC level 5 + 1.5 years of relevant experience *Subject to being offered as 6 months internship/ project)
Minimum Level of Education for Training in School	
Pre-Requisite License or Training	NA
Minimum Job Entry Age	24 Years
Last Reviewed On	NA
Next Review Date	31/01/2027
NSQC Approval Date	31/01/2024
Version	1.0
Reference code on NQR	QG-5.5-CG-02040-2024-V1-CGSC
NQR Version	1

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CSC/N0510: Perform Installation and Configuration of IIoT devices and Products

Description

This OS unit is about physically installing sensors and devices at specified locations and interconnect them according to provided documents.

Scope

The scope covers the following :

- Preparing for Installation, configuring IIoT devices and sensors
- Installing Devices
- Interconnecting Devices Using Specified Cables and Accessories
- Verifying Installation and Interconnection

Elements and Performance Criteria

Perform Installation and Configuration of IIoT devices and Products

To be competent, the user/individual on the job must be able to:

- PC1.** get the list of sensors and other devices to install and their locations
- PC2.** get the installation drawings and instructions for each sensor or device – including wiring and interconnection list and diagram
- PC3.** read the drawing and instructions and ensure that you understand – else seek clarifications and clarify all doubts
- PC4.** prepare a list of all parts and accessories required for the installation
- PC5.** collect all sensors, devices, cables, and other accessories required for the installation
- PC6.** inform the person in-charge of the site (whether belonging to your company or the client) and take permission to do the installation
- PC7.** inspect the site and ensure that the site is ready for installation – in particular, check that the equipment on which sensors or devices are to be installed are in place and are available for installation
- PC8.** perform any site preparations – identify, verify and mark installation location and equipment on drawing, mark locations of holes for support members, drill correct size holes, mark cable entry and exit points, mounting and routing of cable reliefs, cable trays, cable trenches etc.

Installing Devices

To be competent, the user/individual on the job must be able to:

- PC9.** install brackets and other hardware for supporting the sensors or devices according to installation drawings, using approved accessories and hardware
- PC10.** install securely sensors or devices according to installation drawings on the equipment or support members as specified in the drawings
- PC11.** follow specified procedure for mounting of sensor on the equipment – such as inserting the sensor inside the equipment to correct depth or mounting it on a specified surface using specified mounting hardware and using any surfactant compound (such as thermal grease)

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- PC12.** install wireless sensors following specified procedure, ensuring proper connection of power source or battery and correct orientation of antenna
- PC13.** fix any labels, tags, or other markings to identify the devices
- PC14.** cross check installed devices with list provided for correct location, orientation, and any other distinguishing features

Interconnecting Devices using Specified Cables and Accessories

To be competent, the user/individual on the job must be able to:

- PC15.** prepare specified wires and cables of required lengths using recommended practices and terminate on lugs, pins, connectors etc. as specified in drawings – for each sensor or input device to the destination device or junction box
- PC16.** use fiber optic cable of correct types, sizes, and lengths for optical connections
- PC17.** follow specified procedures and protection devices for laying fiber cables and ensure minimum bending radius guidelines
- PC18.** follow colour codes, labelling and ferruling practices for all wires and cables
- PC19.** use industry best practices for installation or wiring where detailed instructions are missing
- PC20.** run wires and cables through the cable entry and exit points, routing via specified cable hose, tray, trench etc. and bring them to the target junction boxes, sensors, or devices, control panels, PLCs etc.
- PC21.** use appropriate cable glands, cable ties, clips, clamps or other specified strain relief or protection device
- PC22.** connect the wire and cable ends to sensors and devices as specified in connection list
- PC23.** follow wiring procedure specified for any Fieldbus devices – consisting of sensors, devices, junction boxes, terminators, power conditioner and host controller. These are normally connected using shielded twisted copper pair connections
- PC24.** follow wiring procedure specified for any Power over Ethernet (POE) connected sensors, devices, terminators, power conditioner and controller, which are normally connected using CAT5/CAT6 wires of specified gauges for the intended length
- PC25.** connect PoE types of powered devices (PDs) to Ethernet networks using specified CAT5 or CAT6 cables and RJ45 connectors following recommended procedure. Such devices include IP surveillance cameras, 802.11ac and 802.11ax access points, LED luminaires, 5G small cells, VoIP phones, and other IoT appliances
- PC26.** ensure correct connection type - T568A or T568B - for all PoE devices as specified in the connection diagram
- PC27.** terminate optical fiber cables on specified connectors using appropriate cutting, stripping and termination tools

Verifying Installation and Interconnection

To be competent, the user/individual on the job must be able to:

- PC28.** verify that all screws are tightened with correct torque and the devices are rigidly mounted to withstand any expected vibration, wind velocity and operational handling
- PC29.** verify that devices do not physically interfere with other equipment or wiring and have specified environmental protection, dust covers, orientation and access
- PC30.** verify all connections for physical integrity, labelling, colour coding and compliance with the connection list
- PC31.** verify correct termination of shields and ground connections

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- PC32.** perform DC continuity check and verify all connections with the connection list
- PC33.** confirm that DC resistance is within specified limits where applicable
- PC34.** verify insulation resistance of cables and connections using insulation tester, where applicable
- PC35.** verify integrity of fiber optic connections using appropriate tools. Verify minimum bending radius guidelines
- PC36.** prepare installation report in prescribed format and submit to authorized persons

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** industry practices for installation and testing of sensors, devices, wires, and cables
- KU2.** organisation SOPs for installation and testing processes
- KU3.** using various hand and powered tools for installation, crimping, wiring, soldering, and testing
- KU4.** SMD components and their handling procedures
- KU5.** ESD handling and protection practices
- KU6.** common wireless standards, devices, and connections for industrial use
- KU7.** Ethernet and PoE connections
- KU8.** optical fiber cables and connectors
- KU9.** optical fiber tools and practices
- KU10.** industrial grounding and shielding practices
- KU11.** about technical drawings and documents
- KU12.** about BoM, wiring diagrams, interconnection lists, schematics, circuit diagrams etc.
- KU13.** colour codes of wires, ethernet cables, resistors
- KU14.** recognising and reading component values of normal electronic and SMD components
- KU15.** to use common electronic tools such as multimeter, signal generator, oscilloscope, fiber continuity tester, cable tester etc.
- KU16.** electrical and other safety standards and practices in industrial environments
- KU17.** security standards and practices in industrial environments
- KU18.** common standards and connections for industrial use such as RS232, RS485, 4-20mA loop, MODBUS, PROFIBUS, Fieldbus, USB, HDMI, BNC, SMA, FC, PC etc.
- KU19.** familiarity with Industry4.0 and IIoT concepts and practices

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** read and write documents, checklists, messages, emails, and other media in language of the workplace
- GS2.** communicate in common and technical terms in language of the workplace
- GS3.** communicate site conditions and issues to co-workers, supervisors, and management
- GS4.** be punctual, take attendance, make work schedule and report



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- GS5.** maintain a clean and healthy environment
- GS6.** maintain workplace practices and ethics
- GS7.** be friendly with customer
- GS8.** be safety consciousness and to avoid risk
- GS9.** observe, vigilate, and conscious about security
- GS10.** handle, respond and escalate problem

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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Perform Installation and Configuration of IIoT devices and Products</i>	8	16	-	-
PC1. get the list of sensors and other devices to install and their locations	1	2	-	-
PC2. get the installation drawings and instructions for each sensor or device - including wiring and interconnection list and diagram	1	2	-	-
PC3. read the drawing and instructions and ensure that you understand - else seek clarifications and clarify all doubts	1	2	-	-
PC4. prepare a list of all parts and accessories required for the installation	1	2	-	-
PC5. collect all sensors, devices, cables, and other accessories required for the installation	1	2	-	-
PC6. inform the person in-charge of the site (whether belonging to your company or the client) and take permission to do the installation	1	2	-	-
PC7. inspect the site and ensure that the site is ready for installation - in particular, check that the equipment on which sensors or devices are to be installed are in place and are available for installation	1	2	-	-
PC8. perform any site preparations - identify, verify and mark installation location and equipment on drawing, mark locations of holes for support members, drill correct size holes, mark cable entry and exit points, mounting and routing of cable reliefs, cable trays, cable trenches etc.	1	2	-	-
<i>Installing Devices</i>	6	12	-	-
PC9. install brackets and other hardware for supporting the sensors or devices according to installation drawings, using approved accessories and hardware	1	2	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC10. install securely sensors or devices according to installation drawings on the equipment or support members as specified in the drawings	1	2	-	-
PC11. follow specified procedure for mounting of sensor on the equipment – such as inserting the sensor inside the equipment to correct depth or mounting it on a specified surface using specified mounting hardware and using any surfactant compound (such as thermal grease)	1	2	-	-
PC12. install wireless sensors following specified procedure, ensuring proper connection of power source or battery and correct orientation of antenna	1	2	-	-
PC13. fix any labels, tags, or other markings to identify the devices	1	2	-	-
PC14. cross check installed devices with list provided for correct location, orientation, and any other distinguishing features	1	2	-	-
<i>Interconnecting Devices using Specified Cables and Accessories</i>	13	26	-	-
PC15. prepare specified wires and cables of required lengths using recommended practices and terminate on lugs, pins, connectors etc. as specified in drawings – for each sensor or input device to the destination device or junction box	1	2	-	-
PC16. use fiber optic cable of correct types, sizes, and lengths for optical connections	1	2	-	-
PC17. follow specified procedures and protection devices for laying fiber cables and ensure minimum bending radius guidelines	1	2	-	-
PC18. follow colour codes, labelling and ferruling practices for all wires and cables	1	2	-	-
PC19. use industry best practices for installation or wiring where detailed instructions are missing	1	2	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC20. run wires and cables through the cable entry and exit points, routing via specified cable hose, tray, trench etc. and bring them to the target junction boxes, sensors, or devices, control panels, PLCs etc.	1	2	-	-
PC21. use appropriate cable glands, cable ties, clips, clamps or other specified strain relief or protection device	1	2	-	-
PC22. connect the wire and cable ends to sensors and devices as specified in connection list	1	2	-	-
PC23. follow wiring procedure specified for any Fieldbus devices - consisting of sensors, devices, junction boxes, terminators, power conditioner and host controller. These are normally connected using shielded twisted copper pair connections	1	2	-	-
PC24. follow wiring procedure specified for any Power over Ethernet (POE) connected sensors, devices, terminators, power conditioner and controller, which are normally connected using CAT5/CAT6 wires of specified gauges for the intended length	1	2	-	-
PC25. connect PoE types of powered devices (PDs) to Ethernet networks using specified CAT5 or CAT6 cables and RJ45 connectors following recommended procedure. Such devices include IP surveillance cameras, 802.11ac and 802.11ax access points, LED luminaires, 5G small cells, VoIP phones, and other IoT appliances	1	2	-	-
PC26. ensure correct connection type - T568A or T568B - for all PoE devices as specified in the connection diagram	1	2	-	-
PC27. terminate optical fiber cables on specified connectors using appropriate cutting, stripping and termination tools	1	2	-	-
<i>Verifying Installation and Interconnection</i>	9	10	-	-
PC28. verify that all screws are tightened with correct torque and the devices are rigidly mounted to withstand any expected vibration, wind velocity and operational handling	1	2	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC29. verify that devices do not physically interfere with other equipment or wiring and have specified environmental protection, dust covers, orientation and access	1	1	-	-
PC30. verify all connections for physical integrity, labelling, colour coding and compliance with the connection list	1	1	-	-
PC31. verify correct termination of shields and ground connections	1	1	-	-
PC32. perform DC continuity check and verify all connections with the connection list	1	1	-	-
PC33. confirm that DC resistance is within specified limits where applicable	1	1	-	-
PC34. verify insulation resistance of cables and connections using insulation tester, where applicable	1	1	-	-
PC35. verify integrity of fiber optic connections using appropriate tools. Verify minimum bending radius guidelines	1	1	-	-
PC36. prepare installation report in prescribed format and submit to authorized persons	1	1	-	-
NOS Total	36	64	-	-

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National Occupational Standards (NOS) Parameters

NOS Code	CSC/N0510
NOS Name	Perform Installation and Configuration of IIoT devices and Products
Sector	Capital Goods
Sub-Sector	Machine Tools, Dies, Moulds and Press Tools, Plastics Manufacturing Machinery, Textile Manufacturing Machinery, Process Plant Machinery, Electrical and Power Machinery, Light Engineering Goods, Defence Equipment, Ship Building & Repair, Fire-Fighting & Safety Equipment, Homeland Security
Occupation	Service
NSQF Level	5.5
Credits	3
Version	1.0
Last Reviewed Date	31/01/2024
Next Review Date	31/01/2027
NSQC Clearance Date	31/01/2024

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CSC/N0516: Collate and analyze Data arising out of a manufacturing process

Description

This NOS unit is about collecting and analyzing the data which arise from the manufacturing process

Scope

The scope covers the following :

- Preparing collation and analysis of data arising out of a manufacturing process

Elements and Performance Criteria

Collate and analyze Data arising out of a manufacturing process

To be competent, the user/individual on the job must be able to:

- PC1.** collect data from various sources such as sensors, PLCs, SCADA systems, and databases.
- PC2.** Ensuring high data quality by implementing processes for data cleaning, normalization, and validation.
- PC3.** utilizing statistical analysis techniques and machine learning algorithms to derive actionable insights from manufacturing data.
- PC4.** identify patterns, trends, and correlations relevant to optimizing manufacturing processes.
- PC5.** Demonstrate accuracy and reliability of predictive models developed for forecasting equipment failures, predicting production outputs, or optimizing process parameters.
- PC6.** Create clear and informative visualizations, dashboards, and reports to communicate insights effectively.
- PC7.** Design visualizations that are intuitive and actionable for decision-makers across different levels of the organization.
- PC8.** conduct root cause analysis to identify factors contributing to manufacturing inefficiencies, defects, or downtime.
- PC9.** Ensure compliance with data privacy regulations (e.g., GDPR, HIPAA) and industry-specific standards (e.g., ISO 9001, IEC 62443) in data handling and analysis.
- PC10.** Implement best practices for data governance, access control, and audit trails to maintain data integrity and security.

Installing Devices

To be competent, the user/individual on the job must be able to:

- PC11.** install brackets and other hardware for supporting the sensors or devices according to installation drawings, using approved accessories and hardware
- PC12.** install securely sensors or devices according to installation drawings on the equipment or support members as specified in the drawings
- PC13.** follow specified procedure for mounting of sensor on the equipment – such as inserting the sensor inside the equipment to correct depth or mounting it on a specified surface using specified mounting hardware and using any surfactant compound (such as thermal grease)

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- PC14.** install wireless sensors following specified procedure, ensuring proper connection of power source or battery and correct orientation of antenna
- PC15.** fix any labels, tags, or other markings to identify the devices
- PC16.** cross check installed devices with list provided for correct location, orientation, and any other distinguishing features

Interconnecting Devices using Specified Cables and Accessories

To be competent, the user/individual on the job must be able to:

- PC17.** prepare specified wires and cables of required lengths using recommended practices and terminate on lugs, pins, connectors etc. as specified in drawings – for each sensor or input device to the destination device or junction box
- PC18.** use fiber optic cable of correct types, sizes, and lengths for optical connections
- PC19.** follow specified procedures and protection devices for laying fiber cables and ensure minimum bending radius guidelines
- PC20.** follow colour codes, labelling and ferruling practices for all wires and cables
- PC21.** use industry best practices for installation or wiring where detailed instructions are missing
- PC22.** run wires and cables through the cable entry and exit points, routing via specified cable hose, tray, trench etc. and bring them to the target junction boxes, sensors, or devices, control panels, PLCs etc.
- PC23.** use appropriate cable glands, cable ties, clips, clamps or other specified strain relief or protection device
- PC24.** connect the wire and cable ends to sensors and devices as specified in connection list
- PC25.** follow wiring procedure specified for any Fieldbus devices – consisting of sensors, devices, junction boxes, terminators, power conditioner and host controller. These are normally connected using shielded twisted copper pair connections
- PC26.** follow wiring procedure specified for any Power over Ethernet (POE) connected sensors, devices, terminators, power conditioner and controller, which are normally connected using CAT5/CAT6 wires of specified gauges for the intended length
- PC27.** connect PoE types of powered devices (PDs) to Ethernet networks using specified CAT5 or CAT6 cables and RJ45 connectors following recommended procedure. Such devices include IP surveillance cameras, 802.11ac and 802.11ax access points, LED luminaires, 5G small cells, VoIP phones, and other IoT appliances
- PC28.** ensure correct connection type - T568A or T568B - for all PoE devices as specified in the connection diagram
- PC29.** terminate optical fiber cables on specified connectors using appropriate cutting, stripping and termination tools

Verifying Installation and Interconnection

To be competent, the user/individual on the job must be able to:

- PC30.** verify that all screws are tightened with correct torque and the devices are rigidly mounted to withstand any expected vibration, wind velocity and operational handling
- PC31.** verify that devices do not physically interfere with other equipment or wiring and have specified environmental protection, dust covers, orientation and access
- PC32.** verify all connections for physical integrity, labelling, colour coding and compliance with the connection list
- PC33.** verify correct termination of shields and ground connections

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- PC34.** perform DC continuity check and verify all connections with the connection list
- PC35.** confirm that DC resistance is within specified limits where applicable
- PC36.** verify insulation resistance of cables and connections using insulation tester, where applicable
- PC37.** verify integrity of fiber optic connections using appropriate tools. Verify minimum bending radius guidelines
- PC38.** prepare installation report in prescribed format and submit to authorized persons

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** industry practices for installation and testing of sensors, devices, wires, and cables
- KU2.** organisation SOPs for installation and testing processes
- KU3.** using various hand and powered tools for installation, crimping, wiring, soldering, and testing
- KU4.** SMD components and their handling procedures
- KU5.** ESD handling and protection practices
- KU6.** common wireless standards, devices, and connections for industrial use
- KU7.** Ethernet and PoE connections
- KU8.** optical fiber cables and connectors
- KU9.** optical fiber tools and practices
- KU10.** industrial grounding and shielding practices
- KU11.** about technical drawings and documents
- KU12.** about BoM, wiring diagrams, interconnection lists, schematics, circuit diagrams etc.
- KU13.** colour codes of wires, ethernet cables, resistors
- KU14.** recognising and reading component values of normal electronic and SMD components
- KU15.** to use common electronic tools such as multimeter, signal generator, oscilloscope, fiber continuity tester, cable tester etc.
- KU16.** electrical and other safety standards and practices in industrial environments
- KU17.** security standards and practices in industrial environments
- KU18.** common standards and connections for industrial use such as RS232, RS485, 4-20mA loop, MODBUS, PROFIBUS, Fieldbus, USB, HDMI, BNC, SMA, FC, PC etc.
- KU19.** familiarity with Industry4.0 and IIoT concepts and practices

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** read and write documents, checklists, messages, emails, and other media in language of the workplace
- GS2.** communicate in common and technical terms in language of the workplace
- GS3.** communicate site conditions and issues to co-workers, supervisors, and management
- GS4.** be punctual, take attendance, make work schedule and report



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- GS5.** maintain a clean and healthy environment
- GS6.** maintain workplace practices and ethics
- GS7.** be friendly with customer
- GS8.** be safety consciousness and to avoid risk
- GS9.** observe, vigilate, and conscious about security
- GS10.** handle, respond and escalate problem

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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Collate and analyze Data arising out of a manufacturing process</i>	12	12	-	-
PC1. collect data from various sources such as sensors, PLCs, SCADA systems, and databases.	-	-	-	-
PC2. Ensuring high data quality by implementing processes for data cleaning, normalization, and validation.	-	-	-	-
PC3. utilizing statistical analysis techniques and machine learning algorithms to derive actionable insights from manufacturing data.	-	-	-	-
PC4. identify patterns, trends, and correlations relevant to optimizing manufacturing processes.	-	-	-	-
PC5. Demonstrate accuracy and reliability of predictive models developed for forecasting equipment failures, predicting production outputs, or optimizing process parameters.	-	-	-	-
PC6. Create clear and informative visualizations, dashboards, and reports to communicate insights effectively.	-	-	-	-
PC7. Design visualizations that are intuitive and actionable for decision-makers across different levels of the organization.	-	-	-	-
PC8. conduct root cause analysis to identify factors contributing to manufacturing inefficiencies, defects, or downtime.	-	-	-	-
PC9. Ensure compliance with data privacy regulations (e.g., GDPR, HIPAA) and industry-specific standards (e.g., ISO 9001, IEC 62443) in data handling and analysis.	-	-	-	-
PC10. Implement best practices for data governance, access control, and audit trails to maintain data integrity and security.	-	-	-	-
<i>Installing Devices</i>	6	12	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. install brackets and other hardware for supporting the sensors or devices according to installation drawings, using approved accessories and hardware	1	2	-	-
PC12. install securely sensors or devices according to installation drawings on the equipment or support members as specified in the drawings	1	2	-	-
PC13. follow specified procedure for mounting of sensor on the equipment – such as inserting the sensor inside the equipment to correct depth or mounting it on a specified surface using specified mounting hardware and using any surfactant compound (such as thermal grease)	1	2	-	-
PC14. install wireless sensors following specified procedure, ensuring proper connection of power source or battery and correct orientation of antenna	1	2	-	-
PC15. fix any labels, tags, or other markings to identify the devices	1	2	-	-
PC16. cross check installed devices with list provided for correct location, orientation, and any other distinguishing features	1	2	-	-
<i>Interconnecting Devices using Specified Cables and Accessories</i>	13	26	-	-
PC17. prepare specified wires and cables of required lengths using recommended practices and terminate on lugs, pins, connectors etc. as specified in drawings – for each sensor or input device to the destination device or junction box	1	2	-	-
PC18. use fiber optic cable of correct types, sizes, and lengths for optical connections	1	2	-	-
PC19. follow specified procedures and protection devices for laying fiber cables and ensure minimum bending radius guidelines	1	2	-	-
PC20. follow colour codes, labelling and ferruling practices for all wires and cables	1	2	-	-
PC21. use industry best practices for installation or wiring where detailed instructions are missing	1	2	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC22. run wires and cables through the cable entry and exit points, routing via specified cable hose, tray, trench etc. and bring them to the target junction boxes, sensors, or devices, control panels, PLCs etc.	1	2	-	-
PC23. use appropriate cable glands, cable ties, clips, clamps or other specified strain relief or protection device	1	2	-	-
PC24. connect the wire and cable ends to sensors and devices as specified in connection list	1	2	-	-
PC25. follow wiring procedure specified for any Fieldbus devices - consisting of sensors, devices, junction boxes, terminators, power conditioner and host controller. These are normally connected using shielded twisted copper pair connections	1	2	-	-
PC26. follow wiring procedure specified for any Power over Ethernet (POE) connected sensors, devices, terminators, power conditioner and controller, which are normally connected using CAT5/CAT6 wires of specified gauges for the intended length	1	2	-	-
PC27. connect PoE types of powered devices (PDs) to Ethernet networks using specified CAT5 or CAT6 cables and RJ45 connectors following recommended procedure. Such devices include IP surveillance cameras, 802.11ac and 802.11ax access points, LED luminaires, 5G small cells, VoIP phones, and other IoT appliances	1	2	-	-
PC28. ensure correct connection type - T568A or T568B - for all PoE devices as specified in the connection diagram	1	2	-	-
PC29. terminate optical fiber cables on specified connectors using appropriate cutting, stripping and termination tools	1	2	-	-
<i>Verifying Installation and Interconnection</i>	9	10	-	-
PC30. verify that all screws are tightened with correct torque and the devices are rigidly mounted to withstand any expected vibration, wind velocity and operational handling	1	2	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC31. verify that devices do not physically interfere with other equipment or wiring and have specified environmental protection, dust covers, orientation and access	1	1	-	-
PC32. verify all connections for physical integrity, labelling, colour coding and compliance with the connection list	1	1	-	-
PC33. verify correct termination of shields and ground connections	1	1	-	-
PC34. perform DC continuity check and verify all connections with the connection list	1	1	-	-
PC35. confirm that DC resistance is within specified limits where applicable	1	1	-	-
PC36. verify insulation resistance of cables and connections using insulation tester, where applicable	1	1	-	-
PC37. verify integrity of fiber optic connections using appropriate tools. Verify minimum bending radius guidelines	1	1	-	-
PC38. prepare installation report in prescribed format and submit to authorized persons	1	1	-	-
NOS Total	40	60	-	-

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National Occupational Standards (NOS) Parameters

NOS Code	CSC/N0516
NOS Name	Collate and analyze Data arising out of a manufacturing process
Sector	Capital Goods
Sub-Sector	Machine Tools, Dies, Moulds and Press Tools, Plastics Manufacturing Machinery, Textile Manufacturing Machinery, Process Plant Machinery, Electrical and Power Machinery, Light Engineering Goods, Defence Equipment, Ship Building & Repair, Fire-Fighting & Safety Equipment, Homeland Security
Occupation	Service
NSQF Level	5.5
Credits	3
Version	1.0
Last Reviewed Date	31/01/2024
Next Review Date	31/01/2027
NSQF Clearance Date	31/01/2024

Qualification Pack

CSC/N0511: Facilitate in Commissioning and Troubleshooting of IIoT systems

Description

This OS unit is about supporting IIoT professionals in commissioning IIoT systems. IIoT configuration, commissioning and testing is performed by IIoT Engineer or other qualified persons

Scope

The scope covers the following :

- Verifying integrity of physical connections between devices and controllers
- Tracing and troubleshooting connection problems
- Providing help in setting up test systems and loop testing

Elements and Performance Criteria

Verifying integrity of physical connections

To be competent, the user/individual on the job must be able to:

- PC1.** refer to the interconnection diagram and wiring list for the location and identify each sensor and device in the network
- PC2.** perform a physical verification of the installation and confirm that installation conforms to specified standards and interconnection list and that the installation is neat, uncluttered, and safe
- PC3.** verify installation done by someone else – who may or may not be a part of your team
- PC4.** identify and correct installation issues such as improper mechanical support, cable routing, cable termination, strain relieving, shielding, use of cable glands
- PC5.** identify and correct issues such as improper cable marking, labelling, ferruling etc.
- PC6.** identify and correct unused, unterminated or missing cable connections issues
- PC7.** report any missing, damaged, or tampered component to the site in-charge

Tracing and troubleshooting connection problems

To be competent, the user/individual on the job must be able to:

- PC8.** use tools for checking network configuration and connectivity – such as cable break detector, etc.
- PC9.** determine the expected impedance and voltage at each network point and device pin in the wiring list
- PC10.** check impedance, voltage, or other parameters at identified points using specified tools and verify that the signal is proper and within limits
- PC11.** follow instructions of commissioning personnel regarding any connection problem and perform the tasks necessary to resolve it

Providing help in setting up test systems and testing

To be competent, the user/individual on the job must be able to:

- PC12.** follow instructions of commissioning personnel to set up the test systems

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- PC13.** follow electrical, electronic, mechanical, and other safety requirements and procedures
- PC14.** use protective gear and tools – such as helmets, goggles, proper gloves, shoes etc. required for the task
- PC15.** read and report instrument data as instructed
- PC16.** follow instructions regarding loop testing
- PC17.** perform any changes or modifications to the installation as instructed and record the changes in appropriate documents
- PC18.** perform disconnection of the test setup, restore normal connections and any clean up when instructed
- PC19.** provide support to the commissioning team in performing user acceptance test

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** industry practices for installation and testing of sensors, devices, wires, and cables
- KU2.** organisation SOPs for installation and testing processes
- KU3.** using various hand and powered tools for installation, crimping, wiring, soldering, and testing
- KU4.** ESD handling and protection practices
- KU5.** common wireless standards, devices, and connections for industrial use
- KU6.** Ethernet and PoE connections
- KU7.** optical fiber cables and connectors
- KU8.** optical fiber tools and practices
- KU9.** industrial grounding and shielding practices
- KU10.** about technical drawings and documents
- KU11.** about BoM, wiring diagrams, interconnection lists, schematics, circuit diagrams etc.
- KU12.** colour codes of wires, ethernet cables, resistors
- KU13.** to use common electronic tools such as multimeter, signal generator, oscilloscope, fiber continuity tester, cable tester etc.
- KU14.** electrical and other safety standards and practices in industrial environments
- KU15.** security standards and practices in industrial environments
- KU16.** common standards and connections for industrial use such as RS232, RS485, 4-20mA loop, MODBUS, PROFIBUS, Fieldbus, USB, HDMI, BNC, SMA, FC, PC etc.
- KU17.** familiarity with Industry 4.0 and IIoT concepts and practices

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** read and write documents, checklists, messages, emails, and other media in language of the workplace
- GS2.** communicate in common and technical terms in language of the workplace
- GS3.** communicate site conditions and issues to co-workers, supervisors, and management



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- GS4.** be punctual, take attendance, make work schedule and report
- GS5.** maintain a clean and healthy environment
- GS6.** maintain workplace practices and ethics
- GS7.** be friendly with customer
- GS8.** be safety consciousness and to avoid risk
- GS9.** observe, vigilate, and conscious about security
- GS10.** handle, respond and escalate problem

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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Verifying integrity of physical connections</i>	10	27	-	-
PC1. refer to the interconnection diagram and wiring list for the location and identify each sensor and device in the network	1	3	-	-
PC2. perform a physical verification of the installation and confirm that installation conforms to specified standards and interconnection list and that the installation is neat, uncluttered, and safe	1	3	-	-
PC3. verify installation done by someone else - who may or may not be a part of your team	2	5	-	-
PC4. identify and correct installation issues such as improper mechanical support, cable routing, cable termination, strain relieving, shielding, use of cable glands	1	3	-	-
PC5. identify and correct issues such as improper cable marking, labelling, ferruling etc.	2	5	-	-
PC6. identify and correct unused, unterminated or missing cable connections issues	1	3	-	-
PC7. report any missing, damaged, or tampered component to the site in-charge	2	5	-	-
<i>Tracing and troubleshooting connection problems</i>	6	16	-	-
PC8. use tools for checking network configuration and connectivity - such as cable break detector, etc.	2	5	-	-
PC9. determine the expected impedance and voltage at each network point and device pin in the wiring list	1	3	-	-
PC10. check impedance, voltage, or other parameters at identified points using specified tools and verify that the signal is proper and within limits	2	5	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. follow instructions of commissioning personnel regarding any connection problem and perform the tasks necessary to resolve it	1	3	-	-
<i>Providing help in setting up test systems and testing</i>	10	31	-	-
PC12. follow instructions of commissioning personnel to set up the test systems	1	3	-	-
PC13. follow electrical, electronic, mechanical, and other safety requirements and procedures	2	5	-	-
PC14. use protective gear and tools – such as helmets, goggles, proper gloves, shoes etc. required for the task	1	3	-	-
PC15. read and report instrument data as instructed	2	5	-	-
PC16. follow instructions regarding loop testing	1	3	-	-
PC17. perform any changes or modifications to the installation as instructed and record the changes in appropriate documents	1	4	-	-
PC18. perform disconnection of the test setup, restore normal connections and any clean up when instructed	1	4	-	-
PC19. provide support to the commissioning team in performing user acceptance test	1	4	-	-
NOS Total	26	74	-	-

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	CSC/N0511
NOS Name	Facilitate in Commissioning and Troubleshooting of IIoT systems
Sector	Capital Goods
Sub-Sector	Machine Tools, Dies, Moulds and Press Tools, Plastics Manufacturing Machinery, Textile Manufacturing Machinery, Process Plant Machinery, Electrical and Power Machinery, Light Engineering Goods, Defence Equipment, Ship Building & Repair, Fire-Fighting & Safety Equipment, Homeland Security
Occupation	Service
NSQF Level	5.5
Credits	4
Version	1.0
Last Reviewed Date	31/01/2024
Next Review Date	31/01/2027
NSQC Clearance Date	31/01/2024

Qualification Pack

CSC/N0512: Assemble and Test Prototype IoT devices

Description

This OS unit is about performing assembly and testing of simple IoT devices according to given design. These are not intended for use in IIoT factories - as industrial devices must meet rigorous design, production, and quality standards. The IoT devices can be used for Proof of Concept and ad-hoc demonstrations where a standard industrial device is not available.

Scope

The scope covers the following :

- Collecting assembly documents and parts
- Performing assembly of PCB and enclosure
- Performing testing and reporting

Elements and Performance Criteria

Collecting assembly documents and parts

To be competent, the user/individual on the job must be able to:

- PC1.** collect the design documents and understand the assembly and test procedure
- PC2.** verify that circuit diagram, BOM and assembly instructions are clear and complete
- PC3.** use recommended ESD protected work bench, wrist band and grounding procedure
- PC4.** collect all parts for the design according to BOM
- PC5.** confirm that all tools required for assembly are available – including soldering and de soldering tools, SMD soldering tools (such as hot air blower, hot tweezer etc.), PCB holder, magnifier, illumination lamp, flux liquid or paste, tweezer, pliers, cutters, cleaning solvent, brush etc.
- PC6.** report any missing, damaged, or spare components or tools to supervisor and get missing parts and clarifications

Performing assembly of PCB and enclosure

To be competent, the user/individual on the job must be able to:

- PC7.** set correct temperature for normal or SMD soldering tools. Set correct air flow rate for SMT soldering
- PC8.** perform assembly of electronic parts on the PCB taking care of the correct orientation of part on the PCB, according to layout and following industry best practices
- PC9.** verify correctness of assembly and ensure that there are no unused parts or shortages
- PC10.** clean the assembled PCB using recommended solvent and dry the PCB following recommended procedure
- PC11.** prepare required cables, connectors, harnesses etc. using recommended wires, accessories, and tools
- PC12.** mount components on the chassis, enclosure, box etc. per given design
- PC13.** solder chassis components and plug cables in appropriate places

Performing testing and reporting

Qualification Pack

To be competent, the user/individual on the job must be able to:

- PC14.** confirm availability of appropriate testing tools such as power supply, signal generator, oscilloscope, dc voltage reference etc. for testing as specified and verify that these are in good working conditions
- PC15.** perform visual check to verify current location, orientation, and polarity of all components on the PCB and chassis
- PC16.** perform multimeter test to ensure that the input power supply lines to the chassis and PCB are not shorted
- PC17.** use fuse links of appropriate ratings
- PC18.** use appropriate power supply to power the device
- PC19.** ensure that the required connectivity is available and credentials are provided for testing wireless or internet connected devices
- PC20.** perform testing of PCB and chassis following step by step testing instructions provided
- PC21.** note any unusual heating of parts, smoke or burning smell – if found, switch off power supply immediately and investigate
- PC22.** record observations and test results in prescribed format
- PC23.** cross check any failed tests with instructions and verify that the test result is correct
- PC24.** consult supervisor or test engineer for any clarifications – especially if there are any failed tests, failed component or in consistent data
- PC25.** switch off all instruments and clean up the work bench on completion of test
- PC26.** follow safety norms and practices and report any non-compliance

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** industry practices for installation and testing of sensors, devices, and internet connections
- KU2.** organisation SOPs for testing processes
- KU3.** using various hand and powered tools for installation, crimping, wiring, soldering, and testing
- KU4.** ESD handling and protection practices
- KU5.** common wireless standards, devices, and connections for industrial use
- KU6.** Ethernet and PoE connections
- KU7.** optical fiber cables and connectors
- KU8.** optical fiber tools and practices
- KU9.** industrial grounding and shielding practices
- KU10.** about technical drawings and documents
- KU11.** about BoM, wiring diagrams, interconnection lists, schematics, circuit diagrams, testing procedures etc.
- KU12.** colour codes of wires, ethernet cables, resistors
- KU13.** to use common electronic tools such as multimeter, signal generator, oscilloscope, fiber continuity tester, cable tester etc.
- KU14.** electrical and other safety standards and practices in industrial environments
- KU15.** security standards and practices in industrial environments



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- KU16.** common standards and connections for industrial use such as RS232, RS485, 4-20mA loop, MODBUS, PROFIBUS, Fieldbus, USB, HDMI, BNC, SMA, FC, PC etc.
- KU17.** familiarity with Industry4.0 and IIoT concepts and practices

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** read and write documents, checklists, messages, emails, and other media in language of the workplace
- GS2.** communicate in common and technical terms in language of the workplace
- GS3.** communicate site conditions and issues to co-workers, supervisors, and management
- GS4.** be punctual, take attendance, make work schedule and report
- GS5.** maintain a clean and healthy environment
- GS6.** maintain workplace practices and ethics
- GS7.** be friendly with customer
- GS8.** be safety consciousness and to avoid risk
- GS9.** observe, vigilate, and conscious about security
- GS10.** handle, respond and escalate problem

Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Collecting assembly documents and parts</i>	6	18	-	-
PC1. collect the design documents and understand the assembly and test procedure	1	3	-	-
PC2. verify that circuit diagram, BOM and assembly instructions are clear and complete	1	3	-	-
PC3. use recommended ESD protected work bench, wrist band and grounding procedure	1	3	-	-
PC4. collect all parts for the design according to BOM	1	3	-	-
PC5. confirm that all tools required for assembly are available – including soldering and de soldering tools, SMD soldering tools (such as hot air blower, hot tweezer etc.), PCB holder, magnifier, illumination lamp, flux liquid or paste, tweezer, pliers, cutters, cleaning solvent, brush etc.	1	3	-	-
PC6. report any missing, damaged, or spare components or tools to supervisor and get missing parts and clarifications	1	3	-	-
<i>Performing assembly of PCB and enclosure</i>	7	21	-	-
PC7. set correct temperature for normal or SMD soldering tools. Set correct air flow rate for SMT soldering	1	3	-	-
PC8. perform assembly of electronic parts on the PCB taking care of the correct orientation of part on the PCB, according to layout and following industry best practices	1	3	-	-
PC9. verify correctness of assembly and ensure that there are no unused parts or shortages	1	3	-	-
PC10. clean the assembled PCB using recommended solvent and dry the PCB following recommended procedure	1	3	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. prepare required cables, connectors, harnesses etc. using recommended wires, accessories, and tools	1	3	-	-
PC12. mount components on the chassis, enclosure, box etc. per given design	1	3	-	-
PC13. solder chassis components and plug cables in appropriate places	1	3	-	-
<i>Performing testing and reporting</i>	13	35	-	-
PC14. confirm availability of appropriate testing tools such as power supply, signal generator, oscilloscope, dc voltage reference etc. for testing as specified and verify that these are in good working conditions	1	3	-	-
PC15. perform visual check to verify current location, orientation, and polarity of all components on the PCB and chassis	1	3	-	-
PC16. perform multimeter test to ensure that the input power supply lines to the chassis and PCB are not shorted	1	3	-	-
PC17. use fuse links of appropriate ratings	1	3	-	-
PC18. use appropriate power supply to power the device	1	3	-	-
PC19. ensure that the required connectivity is available and credentials are provided for testing wireless or internet connected devices	1	3	-	-
PC20. perform testing of PCB and chassis following step by step testing instructions provided	1	3	-	-
PC21. note any unusual heating of parts, smoke or burning smell - if found, switch off power supply immediately and investigate	1	3	-	-
PC22. record observations and test results in prescribed format	1	3	-	-
PC23. cross check any failed tests with instructions and verify that the test result is correct	1	3	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC24. consult supervisor or test engineer for any clarifications – especially if there are any failed tests, failed component or inconsistent data	1	2	-	-
PC25. switch off all instruments and clean up the work bench on completion of test	1	2	-	-
PC26. follow safety norms and practices and report any non-compliance	1	1	-	-
NOS Total	26	74	-	-

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	CSC/N0512
NOS Name	Assemble and Test Prototype IoT devices
Sector	Capital Goods
Sub-Sector	Machine Tools, Dies, Moulds and Press Tools, Plastics Manufacturing Machinery, Textile Manufacturing Machinery, Process Plant Machinery, Electrical and Power Machinery, Light Engineering Goods, Defence Equipment, Ship Building & Repair, Fire-Fighting & Safety Equipment, Homeland Security
Occupation	Service
NSQF Level	5.5
Credits	3
Version	1.0
Last Reviewed Date	31/01/2024
Next Review Date	31/01/2027
NSQC Clearance Date	31/01/2024

Qualification Pack

CSC/N1339: Collaboratively coordinate with the team

Description

This OS unit is about building relationships and working with people and groups inside and outside the organization, using skills and habits, to achieve the team goals and objectives

Scope

The scope covers the following :

- This unit/task covers the following:
- Creating team environment
- Communicating - giving and receiving
- Working cooperatively
- Participating in team decision making
- Demonstrating Sense of Responsibility
- Showing respect for opinions, customs, and preferences

Elements and Performance Criteria

Communicate effectively at the workplace

To be competent, the user/individual on the job must be able to:

- PC1.** exchange information and instruction with colleagues, and seek clarifications and feedback
- PC2.** assist colleagues where required
- PC3.** follow business communication etiquette in all interactions and communicative formats (online, digital, and in-person)
- PC4.** document and share all relevant information with stakeholders in agreed formats and as per agreed timelines

Work effectively

To be competent, the user/individual on the job must be able to:

- PC5.** identify and obtain clarity regarding organisational, team and own goals and targets
- PC6.** prioritise and plan work in order to achieve goals and targets
- PC7.** monitor own and team performance as per agreed plan
- PC8.** complete duties accurately, systematically and within required timeframes
- PC9.** express emotions appropriately at the workplace and manage own response to heightened emotions
- PC10.** maintain orderliness and cleanliness in the work area Maintain and enhance professional competence
- PC11.** identify own strengths and weaknesses in relation to goals and targets
- PC12.** adapt self, service, or product to meet success criteria
- PC13.** seek and select opportunities for continuous professional development
- PC14.** formulate a professional development plan to enhance capabilities

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- PC15.** build or contribute to the organizational knowledge base of cases, clients, issues, solutions, and innovations
- PC16.** examine developments and trends in field of work and their potential impact on work
- PC17.** take feedback from peers, supervisors and clients to improve own performance and practices

Work in a disciplined and ethical manner

To be competent, the user/individual on the job must be able to:

- PC18.** perform tasks as per workplace standards, organizational policies and legislative requirements
- PC19.** display appropriate professional appearance at the workplace and adhere to the organizational dress code
- PC20.** demonstrate responsible and disciplined behavior at the workplace such as punctuality; completing tasks as per given time and standards; demonstrating professional behavior at all times, adopting environment- friendly practices, etc.
- PC21.** identify the cause of conflict and options for resolution with peers or escalate grievances and problems to appropriate authority as per procedure for conflict resolution
- PC22.** protect the rights of the client and organization when delivering services
- PC23.** ensure services are delivered equally to all clients regardless of personal and cultural beliefs
- PC24.** operate within an agreed ethical code of practice and report unethical conduct to the appropriate authorities
- PC25.** follow organizational guidelines and legal requirements on disclosure and confidentiality

Uphold social diversity at the workplace

To be competent, the user/individual on the job must be able to:

- PC26.** recognize and evaluate biased practices against underrepresented groups like women and persons with disabilities, in workplace systems and processes
- PC27.** identify and report discrimination and harassment based on gender, disability, or cultural difference at the workplace
- PC28.** use inclusive or neutral language and gestures in all interactions
- PC29.** respect the personal and professional space of others
- PC30.** access grievance redressal mechanisms as per legislations

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** the organisation's policies and procedures for working with colleagues, roles and responsibilities
- KU2.** the importance of effective communication and establishing good working relationships with colleagues
- KU3.** different methods of communication and the circumstances in which it is appropriate to use these
- KU4.** the importance of creating an environment of trust and mutual respect
- KU5.** the implications of own work on the work and schedule of others
- KU6.** different types of information that colleagues might need and the importance of providing this information when it is required

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KU7. the importance of helping colleagues with problems, to meet quality and time standards as a team

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** read and write instructions, guidelines, procedures, messages, emails, and other media in language of the workplace
- GS2.** communicate in common and technical terms in language of the workplace
- GS3.** listen effectively and orally communicate information
- GS4.** be punctual, do work scheduling and reporting
- GS5.** comply with workplace practices and ethics
- GS6.** maintain cleanliness and healthy environment
- GS7.** be customer friendly - understand real needs of the customer and suggest most appropriate solution
- GS8.** be safety conscious and avoid risk
- GS9.** be observant, vigilant, and security consciousness
- GS10.** respond, handle problem, and escalate as necessary
- GS11.** ask for clarification and advice from concerned persons
- GS12.** make decisions on a suitable course of action or response keeping in view resource utilization while meeting commitments
- GS13.** plan and organize work to achieve targets and deadlines

Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Communicate effectively at the workplace</i>	7	20	-	-
PC1. exchange information and instruction with colleagues, and seek clarifications and feedback	-	-	-	-
PC2. assist colleagues where required	-	-	-	-
PC3. follow business communication etiquette in all interactions and communicative formats (online, digital, and in-person)	-	-	-	-
PC4. document and share all relevant information with stakeholders in agreed formats and as per agreed timelines	-	-	-	-
<i>Work effectively</i>	7	20	-	-
PC5. identify and obtain clarity regarding organisational, team and own goals and targets	-	-	-	-
PC6. prioritise and plan work in order to achieve goals and targets	-	-	-	-
PC7. monitor own and team performance as per agreed plan	-	-	-	-
PC8. complete duties accurately, systematically and within required timeframes	-	-	-	-
PC9. express emotions appropriately at the workplace and manage own response to heightened emotions	-	-	-	-
PC10. maintain orderliness and cleanliness in the work area Maintain and enhance professional competence	-	-	-	-
PC11. identify own strengths and weaknesses in relation to goals and targets	-	-	-	-
PC12. adapt self, service, or product to meet success criteria	-	-	-	-
PC13. seek and select opportunities for continuous professional development	-	-	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC14. formulate a professional development plan to enhance capabilities	-	-	-	-
PC15. build or contribute to the organizational knowledge base of cases, clients, issues, solutions, and innovations	-	-	-	-
PC16. examine developments and trends in field of work and their potential impact on work	-	-	-	-
PC17. take feedback from peers, supervisors and clients to improve own performance and practices	-	-	-	-
<i>Work in a disciplined and ethical manner</i>	8	20	-	-
PC18. perform tasks as per workplace standards, organizational policies and legislative requirements	-	-	-	-
PC19. display appropriate professional appearance at the workplace and adhere to the organizational dress code	-	-	-	-
PC20. demonstrate responsible and disciplined behavior at the workplace such as punctuality; completing tasks as per given time and standards; demonstrating professional behavior at all times, adopting environment- friendly practices, etc.	-	-	-	-
PC21. identify the cause of conflict and options for resolution with peers or escalate grievances and problems to appropriate authority as per procedure for conflict resolution	-	-	-	-
PC22. protect the rights of the client and organization when delivering services	-	-	-	-
PC23. ensure services are delivered equally to all clients regardless of personal and cultural beliefs	-	-	-	-
PC24. operate within an agreed ethical code of practice and report unethical conduct to the appropriate authorities	-	-	-	-
PC25. follow organizational guidelines and legal requirements on disclosure and confidentiality	-	-	-	-
<i>Uphold social diversity at the workplace</i>	8	10	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC26. recognize and evaluate biased practices against underrepresented groups like women and persons with disabilities, in workplace systems and processes	-	-	-	-
PC27. identify and report discrimination and harassment based on gender, disability, or cultural difference at the workplace	-	-	-	-
PC28. use inclusive or neutral language and gestures in all interactions	-	-	-	-
PC29. respect the personal and professional space of others	-	-	-	-
PC30. access grievance redressal mechanisms as per legislations	-	-	-	-
NOS Total	30	70	-	-

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	CSC/N1339
NOS Name	Collaboratively coordinate with the team
Sector	Capital Goods
Sub-Sector	Generic
Occupation	Generic
NSQF Level	5
Credits	3
Version	1.0
Last Reviewed Date	31/01/2024
Next Review Date	31/01/2027
NSQC Clearance Date	31/01/2024

Qualification Pack

CSC/N0505: Follow health, safety and environment guidelines at workplace

Description

This OS unit is about following adequate safety procedures to make work environment healthy and safe

Scope

The scope covers the following :

- This unit/task covers the following:
- Adhere to standard safety procedures of the company
- Follow healthy practices and posture
- Practice waste management and recycling
- Conserve material and resources

Elements and Performance Criteria

Adhere to standard safety procedures of the organisation

To be competent, the user/individual on the job must be able to:

- PC1.** comply with general safety procedures and those for handling equipment, tools, chemicals, and hazardous material, as prescribed and followed in the organisation
- PC2.** remove finger rings or any other metal objects likely to interfere with the work
- PC3.** ensure that identification badge or any other object worn around the neck or on the clothing does not get caught in any rotating machine, or otherwise interfere with the work
- PC4.** use appropriate safety devices such as goggles, gloves, ear plugs, caps, ESD pins, covers, shoes, helmets etc. recommended for the work being performed
- PC5.** inform, escalate, or raise alarm about any suspicions, unaccounted hazardous material, devices, or other objects found in the premises
- PC6.** inform, escalate, or raise alarm about any breach of safety or security procedure in the organisation
- PC7.** help achieve zero accidents goals at work
- PC8.** avoid damage to sensitive electronic components due to negligence of ESD procedures
- PC9.** participate regularly in fire drills or other safety related workshops organised by the organisation
- PC10.** follow strictly all access control and perimeter safety procedures in designated factory areas such as robotic work stations, automated production lines, automated material movement and other potentially risky operations
- PC11.** ensure that other people follow all access control and perimeter safety procedures in designated factory areas and help avoid accidents
- PC12.** use emergency switches or other mechanisms of stopping a machine immediately in case any emergency situation has developed or about to happen
- PC13.** ensure that electrical equipment are properly grounded
- PC14.** follow Cyber Security guidelines and be vigilant at workplace

Qualification Pack

PC15. proceed to designated safe assembly area immediately on hearing fire alarm

Follow healthy practices and posture

To be competent, the user/individual on the job must be able to:

PC16. wash hands and use sanitizers as recommended to prevent spread of diseases

PC17. follow common personal hygiene practices

PC18. maintain appropriate posture, especially in long hours of sitting or standing position and in handling heavy materials

PC19. participate in company organised health sessions such as exercises, games, yoga, physiotherapy, and other activities

PC20. handle heavy and hazardous materials with care, while maintaining appropriate posture, using suitable tools, and handling equipment such as trolleys, jacks, and ladders

PC21. learn and apply first aid devices available in the workplace

PC22. learn and apply safety and handling procedures for electrical shock and electrocution

PC23. learn and apply emergency medical help services

PC24. follow workplace decorum and avoid emotional outbursts or inappropriate language

PC25. prevent any harassment at workplace

Practice waste management and recycling

To be competent, the user/individual on the job must be able to:

PC26. identify recyclable, non-recyclable, and hazardous waste generated in the workplace and comply with their disposal procedures

PC27. dispose non-recyclable waste and hazardous waste following recommended processes

PC28. deposit recyclable and reusable material at identified locations

PC29. support education and compliance of waste management processes

Conserve material and resources

To be competent, the user/individual on the job must be able to:

PC30. identify ways to optimize usage of material and resources such as water, electricity, energy in various tasks, activities, and processes

PC31. check for spills and leakages of material in various tasks, activities, and processes and plug them

PC32. escalate the leakage issue to appropriate authority if needed

PC33. carry out routine cleaning of tools, machines, and equipment and maintain them in good working condition to optimize efficiency and wastage

PC34. check if the equipment is functioning normally before commencing work and rectify or report any malfunctioning to the responsible agency

PC35. check for any odour, sparks, fumes, emission, unusual vibration, noise, or any other objectionable presence in the environment and take immediate corrective action followed by report to responsible agency

PC36. ensure electrical equipment are properly connected for use and are switched off when not in use

PC37. support education and compliance of resource conservation processes

Knowledge and Understanding (KU)

Qualification Pack

The individual on the job needs to know and understand:

- KU1.** company policies on workplace, environment, and personnel management
- KU2.** company policy on occupational safety and health
- KU3.** professional hazards related to nature of work and how to deal with them
- KU4.** how to maintain the work area safe and secure
- KU5.** how to handle hazardous materials, tools, and equipment
- KU6.** emergency procedures for fire, electrocution, physical injury, wounds, etc.
- KU7.** need for proper body posture and use of appropriate handling equipment
- KU8.** understand electrical grounding practices
- KU9.** common sources of pollution and ways to minimize it
- KU10.** waste management - categorisation, colour coding, handling, and disposal procedure
- KU11.** organisation policies and procedures for minimizing waste
- KU12.** efficient use of electricity, material, and water in processes
- KU13.** organization policies regarding network usage and security
- KU14.** norms for professional behaviour at workplace and dealing with deviations

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** communicating in the language of the workplace
- GS2.** reading and interpreting documents, drawings, symbols, and instructions
- GS3.** operating computer and common office equipment and diagnosing common electrical and interconnection problems
- GS4.** writing notes, reports, observations, emails
- GS5.** using personnel protective devices
- GS6.** maintaining clean and healthy work environment
- GS7.** using and operating safety devices and equipment
- GS8.** conducting work following workplace security processes and rules
- GS9.** responding to emergency situations pertaining to workplace
- GS10.** understanding people and collaborating to create a healthy workplace

Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Adhere to standard safety procedures of the organisation</i>	7	10	-	-
PC1. comply with general safety procedures and those for handling equipment, tools, chemicals, and hazardous material, as prescribed and followed in the organisation	-	-	-	-
PC2. remove finger rings or any other metal objects likely to interfere with the work	-	-	-	-
PC3. ensure that identification badge or any other object worn around the neck or on the clothing does not get caught in any rotating machine, or otherwise interfere with the work	-	-	-	-
PC4. use appropriate safety devices such as goggles, gloves, ear plugs, caps, ESD pins, covers, shoes, helmets etc. recommended for the work being performed	-	-	-	-
PC5. inform, escalate, or raise alarm about any suspicions, unaccounted hazardous material, devices, or other objects found in the premises	-	-	-	-
PC6. inform, escalate, or raise alarm about any breach of safety or security procedure in the organisation	-	-	-	-
PC7. help achieve zero accidents goals at work	-	-	-	-
PC8. avoid damage to sensitive electronic components due to negligence of ESD procedures	-	-	-	-
PC9. participate regularly in fire drills or other safety related workshops organised by the organisation	-	-	-	-
PC10. follow strictly all access control and perimeter safety procedures in designated factory areas such as robotic work stations, automated production lines, automated material movement and other potentially risky operations	-	-	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. ensure that other people follow all access control and perimeter safety procedures in designated factory areas and help avoid accidents	-	-	-	-
PC12. use emergency switches or other mechanisms of stopping a machine immediately in case any emergency situation has developed or about to happen	-	-	-	-
PC13. ensure that electrical equipment are properly grounded	-	-	-	-
PC14. follow Cyber Security guidelines and be vigilant at workplace	-	-	-	-
PC15. proceed to designated safe assembly area immediately on hearing fire alarm	-	-	-	-
<i>Follow healthy practices and posture</i>	8	10	-	-
PC16. wash hands and use sanitizers as recommended to prevent spread of diseases	-	-	-	-
PC17. follow common personal hygiene practices	-	-	-	-
PC18. maintain appropriate posture, especially in long hours of sitting or standing position and in handling heavy materials	-	-	-	-
PC19. participate in company organised health sessions such as exercises, games, yoga, physiotherapy, and other activities	-	-	-	-
PC20. handle heavy and hazardous materials with care, while maintaining appropriate posture, using suitable tools, and handling equipment such as trolleys, jacks, and ladders	-	-	-	-
PC21. learn and apply first aid devices available in the workplace	-	-	-	-
PC22. learn and apply safety and handling procedures for electrical shock and electrocution	-	-	-	-
PC23. learn and apply emergency medical help services	-	-	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC24. follow workplace decorum and avoid emotional outbursts or inappropriate language	-	-	-	-
PC25. prevent any harassment at workplace	-	-	-	-
<i>Practice waste management and recycling</i>	-	-	-	-
PC26. identify recyclable, non-recyclable, and hazardous waste generated in the workplace and comply with their disposal procedures	-	-	-	-
PC27. dispose non-recyclable waste and hazardous waste following recommended processes	-	-	-	-
PC28. deposit recyclable and reusable material at identified locations	-	-	-	-
PC29. support education and compliance of waste management processes	-	-	-	-
<i>Conserve material and resources</i>	-	-	-	-
PC30. identify ways to optimize usage of material and resources such as water, electricity, energy in various tasks, activities, and processes	-	-	-	-
PC31. check for spills and leakages of material in various tasks, activities, and processes and plug them	-	-	-	-
PC32. escalate the leakage issue to appropriate authority if needed	-	-	-	-
PC33. carry out routine cleaning of tools, machines, and equipment and maintain them in good working condition to optimize efficiency and wastage	-	-	-	-
PC34. check if the equipment is functioning normally before commencing work and rectify or report any malfunctioning to the responsible agency	-	-	-	-
PC35. check for any odour, sparks, fumes, emission, unusual vibration, noise, or any other objectionable presence in the environment and take immediate corrective action followed by report to responsible agency	-	-	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC36. ensure electrical equipment are properly connected for use and are switched off when not in use	-	-	-	-
PC37. support education and compliance of resource conservation processes	-	-	-	-
NOS Total	15	20	-	-

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	CSC/N0505
NOS Name	Follow health, safety and environment guidelines at workplace
Sector	Capital Goods
Sub-Sector	Machine Tools, Dies, Moulds and Press Tools, Plastics Manufacturing Machinery, Textile Manufacturing Machinery, Process Plant Machinery, Electrical and Power Machinery, Defence Equipment, Fire-Fighting & Safety Equipment, Homeland Security
Occupation	Service
NSQF Level	5
Credits	1
Version	1.0
Last Reviewed Date	31/01/2024
Next Review Date	31/01/2027
NSQC Clearance Date	31/01/2024

Qualification Pack

DGT/VSQ/N0102: Employability Skills (60 Hours)

Description

This unit is about employability skills, Constitutional values, becoming a professional in the 21st Century, digital, financial, and legal literacy, diversity and Inclusion, English and communication skills, customer service, entrepreneurship, and apprenticeship, getting ready for jobs and career development.

Scope

The scope covers the following :

- Introduction to Employability Skills
- Constitutional values - Citizenship
- Becoming a Professional in the 21st Century
- Basic English Skills
- Career Development & Goal Setting
- Communication Skills
- Diversity & Inclusion
- Financial and Legal Literacy
- Essential Digital Skills
- Entrepreneurship
- Customer Service
- Getting ready for Apprenticeship & Jobs

Elements and Performance Criteria

Introduction to Employability Skills

To be competent, the user/individual on the job must be able to:

- PC1.** identify employability skills required for jobs in various industries
- PC2.** identify and explore learning and employability portals

Constitutional values - Citizenship

To be competent, the user/individual on the job must be able to:

- PC3.** recognize the significance of constitutional values, including civic rights and duties, citizenship, responsibility towards society etc. and personal values and ethics such as honesty, integrity, caring and respecting others, etc.
- PC4.** follow environmentally sustainable practices

Becoming a Professional in the 21st Century

To be competent, the user/individual on the job must be able to:

- PC5.** recognize the significance of 21st Century Skills for employment
- PC6.** practice the 21st Century Skills such as Self-Awareness, Behaviour Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn for continuous learning etc. in personal and professional life

Basic English Skills

To be competent, the user/individual on the job must be able to:

Qualification Pack

- PC7.** use basic English for everyday conversation in different contexts, in person and over the telephone
- PC8.** read and understand routine information, notes, instructions, mails, letters etc. written in English
- PC9.** write short messages, notes, letters, e-mails etc. in English

Career Development & Goal Setting

To be competent, the user/individual on the job must be able to:

- PC10.** understand the difference between job and career
- PC11.** prepare a career development plan with short- and long-term goals, based on aptitude

Communication Skills

To be competent, the user/individual on the job must be able to:

- PC12.** follow verbal and non-verbal communication etiquette and active listening techniques in various settings
- PC13.** work collaboratively with others in a team

Diversity & Inclusion

To be competent, the user/individual on the job must be able to:

- PC14.** communicate and behave appropriately with all genders and PwD
- PC15.** escalate any issues related to sexual harassment at workplace according to POSH Act

Financial and Legal Literacy

To be competent, the user/individual on the job must be able to:

- PC16.** select financial institutions, products and services as per requirement
- PC17.** carry out offline and online financial transactions, safely and securely
- PC18.** identify common components of salary and compute income, expenses, taxes, investments etc
- PC19.** identify relevant rights and laws and use legal aids to fight against legal exploitation

Essential Digital Skills

To be competent, the user/individual on the job must be able to:

- PC20.** operate digital devices and carry out basic internet operations securely and safely
- PC21.** use e- mail and social media platforms and virtual collaboration tools to work effectively
- PC22.** use basic features of word processor, spreadsheets, and presentations

Entrepreneurship

To be competent, the user/individual on the job must be able to:

- PC23.** identify different types of Entrepreneurship and Enterprises and assess opportunities for potential business through research
- PC24.** develop a business plan and a work model, considering the 4Ps of Marketing Product, Price, Place and Promotion
- PC25.** identify sources of funding, anticipate, and mitigate any financial/ legal hurdles for the potential business opportunity

Customer Service

To be competent, the user/individual on the job must be able to:

- PC26.** identify different types of customers
- PC27.** identify and respond to customer requests and needs in a professional manner.

Qualification Pack

PC28. follow appropriate hygiene and grooming standards

Getting ready for apprenticeship & Jobs

To be competent, the user/individual on the job must be able to:

PC29. create a professional Curriculum vitae (Résumé)

PC30. search for suitable jobs using reliable offline and online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals, respectively

PC31. apply to identified job openings using offline /online methods as per requirement

PC32. answer questions politely, with clarity and confidence, during recruitment and selection

PC33. identify apprenticeship opportunities and register for it as per guidelines and requirements

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. need for employability skills and different learning and employability related portals

KU2. various constitutional and personal values

KU3. different environmentally sustainable practices and their importance

KU4. Twenty first (21st) century skills and their importance

KU5. how to use English language for effective verbal (face to face and telephonic) and written communication in formal and informal set up

KU6. importance of career development and setting long- and short-term goals

KU7. about effective communication

KU8. POSH Act

KU9. Gender sensitivity and inclusivity

KU10. different types of financial institutes, products, and services

KU11. how to compute income and expenditure

KU12. importance of maintaining safety and security in offline and online financial transactions

KU13. different legal rights and laws

KU14. different types of digital devices and the procedure to operate them safely and securely

KU15. how to create and operate an e- mail account and use applications such as word processors, spreadsheets etc.

KU16. how to identify business opportunities

KU17. types and needs of customers

KU18. how to apply for a job and prepare for an interview

KU19. apprenticeship scheme and the process of registering on apprenticeship portal

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. read and write different types of documents/instructions/correspondence

GS2. communicate effectively using appropriate language in formal and informal settings



Qualification Pack

- GS3.** behave politely and appropriately with all
- GS4.** how to work in a virtual mode
- GS5.** perform calculations efficiently
- GS6.** solve problems effectively
- GS7.** pay attention to details
- GS8.** manage time efficiently
- GS9.** maintain hygiene and sanitization to avoid infection

Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Introduction to Employability Skills</i>	1	1	-	-
PC1. identify employability skills required for jobs in various industries	-	-	-	-
PC2. identify and explore learning and employability portals	-	-	-	-
<i>Constitutional values - Citizenship</i>	1	1	-	-
PC3. recognize the significance of constitutional values, including civic rights and duties, citizenship, responsibility towards society etc. and personal values and ethics such as honesty, integrity, caring and respecting others, etc.	-	-	-	-
PC4. follow environmentally sustainable practices	-	-	-	-
<i>Becoming a Professional in the 21st Century</i>	2	4	-	-
PC5. recognize the significance of 21st Century Skills for employment	-	-	-	-
PC6. practice the 21st Century Skills such as Self-Awareness, Behaviour Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn for continuous learning etc. in personal and professional life	-	-	-	-
<i>Basic English Skills</i>	2	3	-	-
PC7. use basic English for everyday conversation in different contexts, in person and over the telephone	-	-	-	-
PC8. read and understand routine information, notes, instructions, mails, letters etc. written in English	-	-	-	-
PC9. write short messages, notes, letters, e-mails etc. in English	-	-	-	-
<i>Career Development & Goal Setting</i>	1	2	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC10. understand the difference between job and career	-	-	-	-
PC11. prepare a career development plan with short- and long-term goals, based on aptitude	-	-	-	-
<i>Communication Skills</i>	2	2	-	-
PC12. follow verbal and non-verbal communication etiquette and active listening techniques in various settings	-	-	-	-
PC13. work collaboratively with others in a team	-	-	-	-
<i>Diversity & Inclusion</i>	1	2	-	-
PC14. communicate and behave appropriately with all genders and PwD	-	-	-	-
PC15. escalate any issues related to sexual harassment at workplace according to POSH Act	-	-	-	-
<i>Financial and Legal Literacy</i>	2	3	-	-
PC16. select financial institutions, products and services as per requirement	-	-	-	-
PC17. carry out offline and online financial transactions, safely and securely	-	-	-	-
PC18. identify common components of salary and compute income, expenses, taxes, investments etc	-	-	-	-
PC19. identify relevant rights and laws and use legal aids to fight against legal exploitation	-	-	-	-
<i>Essential Digital Skills</i>	3	4	-	-
PC20. operate digital devices and carry out basic internet operations securely and safely	-	-	-	-
PC21. use e- mail and social media platforms and virtual collaboration tools to work effectively	-	-	-	-
PC22. use basic features of word processor, spreadsheets, and presentations	-	-	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Entrepreneurship</i>	2	3	-	-
PC23. identify different types of Entrepreneurship and Enterprises and assess opportunities for potential business through research	-	-	-	-
PC24. develop a business plan and a work model, considering the 4Ps of Marketing Product, Price, Place and Promotion	-	-	-	-
PC25. identify sources of funding, anticipate, and mitigate any financial/ legal hurdles for the potential business opportunity	-	-	-	-
<i>Customer Service</i>	1	2	-	-
PC26. identify different types of customers	-	-	-	-
PC27. identify and respond to customer requests and needs in a professional manner.	-	-	-	-
PC28. follow appropriate hygiene and grooming standards	-	-	-	-
<i>Getting ready for apprenticeship & Jobs</i>	2	3	-	-
PC29. create a professional Curriculum vitae (Résumé)	-	-	-	-
PC30. search for suitable jobs using reliable offline and online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals, respectively	-	-	-	-
PC31. apply to identified job openings using offline /online methods as per requirement	-	-	-	-
PC32. answer questions politely, with clarity and confidence, during recruitment and selection	-	-	-	-
PC33. identify apprenticeship opportunities and register for it as per guidelines and requirements	-	-	-	-
NOS Total	20	30	-	-

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	DGT/VSQ/N0102
NOS Name	Employability Skills (60 Hours)
Sector	Cross Sectoral
Sub-Sector	Professional Skills
Occupation	Employability
NSQF Level	4
Credits	2
Version	1.0
Last Reviewed Date	30/11/2023
Next Review Date	29/11/2026
NSQC Clearance Date	30/11/2023

Assessment Guidelines and Assessment Weightage

Assessment Guidelines

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 the proportion of marks for Theory and Skills Practical for each PC.
2. The assessment for the theory part will be based on the 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 the theory part for each candidate at each examination/training centre (as per assessment criteria below).
5. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/ training centre based on these criteria.
6. To pass the Qualification Pack assessment, every trainee should score a minimum of 70% of % aggregate marks to successfully clear the assessment.

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7. In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack.

Minimum Aggregate Passing % at QP Level : 70

(Please note: Every Trainee should score a minimum aggregate passing percentage as specified above, to successfully clear the Qualification Pack assessment.)

Assessment Weightage

Compulsory NOS

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
CSC/N0510.Perform Installation and Configuration of IIoT devices and Products	36	64	0	0	100	20
CSC/N0516.Collate and analyze Data arising out of a manufacturing process	40	60	0	0	100	20
CSC/N0511.Facilitate in Commissioning and Troubleshooting of IIoT systems	26	74	0	0	100	20
CSC/N0512.Assemble and Test Prototype IoT devices	26	74	0	0	100	15
CSC/N1339.Collaboratively coordinate with the team	30	70	-	-	100	10
CSC/N0505.Follow health, safety and environment guidelines at workplace	15	20	-	-	35	10
DGT/VSQ/N0102.Employability Skills (60 Hours)	20	30	-	-	50	5
Total	193	392	-	-	585	100



Qualification Pack

Acronyms

NOS	National Occupational Standard(s)
NSQF	National Skills Qualifications Framework
QP	Qualifications Pack
TVET	Technical and Vocational Education and Training

Qualification Pack

Glossary

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.
Job role	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 (KU) they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria (PC)	Performance Criteria (PC) 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 OS, together with the educational, training and other criteria required to perform a job role. A QP is assigned a unique qualifications pack code.
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.

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Knowledge and Understanding (KU)	Knowledge and Understanding (KU) are statements which together specify the technical, generic, professional and organisational specific knowledge that an individual needs in order 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 Knowledge	Technical knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
Core Skills/ Generic Skills (GS)	Core skills or Generic Skills (GS) 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. These skills are typically needed in any work environment. In the context of the OS, these include communication related skills that are applicable to most job roles.
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.