

## Qualification Pack



# Advance Mechatronics Engineer

QP Code: CSC/Q0414

Version: 1.0

NSQF Level: 5.5

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## Qualification Pack

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### CSC/Q0414: Advance Mechatronics Engineer

#### Brief Job Description

An Advanced Mechatronics Engineer is responsible for the install, repair, adjust, and test of equipment and components to ensure that systems function properly within the manufacturing industry.

#### Personal Attributes

An advanced mechatronics engineer possesses a diverse skill set, blending expertise in mechanical, electrical, and computer engineering. They excel in integrating complex systems, demonstrating proficiency in robotics, automation, and control theory. With a keen eye for innovation, they creatively solve challenges, leveraging their analytical mindset and attention to detail.

#### Applicable National Occupational Standards (NOS)

##### Compulsory NOS:

1. [CSC/N0507: Configure and install electronic components in the mechatronic systems](#)
2. [CSC/N0508: Aligning and testing of electronic sensors and actuators in the mechatronics system](#)
3. [CSC/N0424: Configure and test the microcontroller in the mechatronics system](#)
4. [CSC/N1339: Collaboratively coordinate with the team](#)
5. [CSC/N0505: Follow health, safety and environment guidelines at workplace](#)
6. [DGT/VSQ/N0102: Employability Skills \(60 Hours\)](#)

#### Qualification Pack (QP) Parameters

Sector	Capital Goods
Sub-Sector	Machine Tools
Occupation	Design, Design
Country	India
NSQF Level	5.5
Credits	19

### Qualification Pack

<b>Aligned to NCO/ISCO/ISIC Code</b>	NCO-2015/2144.99
<b>Minimum Educational Qualification &amp; Experience</b>	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)
<b>Minimum Level of Education for Training in School</b>	
<b>Pre-Requisite License or Training</b>	NA
<b>Minimum Job Entry Age</b>	24 Years
<b>Last Reviewed On</b>	NA
<b>Next Review Date</b>	31/01/2027
<b>NSQC Approval Date</b>	31/01/2024
<b>Version</b>	1.0
<b>Reference code on NQR</b>	QG-5.5-CG-02047-2024-VCGSC
<b>NQR Version</b>	1

## Qualification Pack

### CSC/N0507: Configure and install electronic components in the mechatronic systems

#### Description

This OS unit is about setting up circuits and electrical components in the mechatronics system.

#### Scope

The scope covers the following :

- Setting up microcontrollers
- Setting up circuits, electrical components and pneumatic systems

#### Elements and Performance Criteria

##### *Setting up microcontrollers*

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

- PC1. select an appropriate mechatronics system to solve the given industrial problem(s) and improve productivity
- PC2. select the appropriate mechatronics components for the installation of the mechatronics system
- PC3. test the mechatronics components to ensure they are functioning correctly
- PC4. install the mechatronics control system
- PC5. program the microprocessor and microcontroller
- PC6. install the hardware interfacing units of microcontrollers
- PC7. test the microcontrollers for the correct functioning and carry out troubleshooting for any issues identified

##### *Setting up circuits, electrical components and pneumatic systems*

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

- PC8. select the appropriate power converter circuits and electrical drives for installation
- PC9. test the electrical components and circuits for correct functioning and compatibility with the mechatronics system
- PC10. select the appropriate pneumatic values according to the need
- PC11. perform sequence control and use the logic functions for operating the pneumatic system
- PC12. use relays in the pneumatic system
- PC13. monitor the pneumatic fluid by analysing the speed and pressure control sensors
- PC14. carry out troubleshooting for any issues encountered with the pneumatic system
- PC15. design the cascade circuits
- PC16. use the appropriate techniques for programming PLC with the help of Ladder diagram
- PC17. install the pneumatic power system
- PC18. follow the relevant case studies for implementing the pneumatic system in the automatic production line

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PC19. carry out maintenance of the circuits, electrical components and pneumatic system

### Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1. the need and scope of mechatronics system
- KU2. mechatronics system and its scope in the automation sector
- KU3. the traditional vs. mechatronics approach
- KU4. how to interpret the block diagram representation of general mechatronics system showing various components with suitable example
- KU5. relevant control systems such as open and closed-loop systems, basic elements of the closed-loop system
- KU6. basic circuit concepts
- KU7. the semiconductor circuit elements
- KU8. different types of circuits used in mechatronic devices
- KU9. how to interpret the pneumatic symbols in pneumatic systems
- KU10. the function and operation of pneumatic valves
- KU11. the logic functions used in the pneumatic system
- KU12. the sequence control for operating the pneumatic system
- KU13. the function of relays and their working in the pneumatic system
- KU14. the need for the proximity sensor and its application in pneumatic cylinder
- KU15. speed and pressure control sensor for monitoring the pneumatic fluid
- KU16. the design of cascade circuits
- KU17. the process of programming PLCs in the Ladder diagram
- KU18. the pneumatic systems used in the automatic production line
- KU19. the principles of operation, characteristics and applications of power semiconductor devices
- KU20. the characteristics of power semiconductor devices and circuits
- KU21. the concept of fluid power
- KU22. how to carry out repair and maintenance of the circuits, electrical components and pneumatic system

### Generic Skills (GS)

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

- GS1. write work-related notes and maintain relevant records
- GS2. read the relevant literature to get the latest updates about the field of work
- GS3. listen attentively to understand the information/ instructions being shared by the speaker
- GS4. communicate politely and professionally
- GS5. plan and prioritise tasks to ensure timely completion
- GS6. evaluate all possible solutions to a problem to select the best one



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- GS7. co-ordinate with the co-workers to achieve work objectives
- GS8. identify possible disruptions to work and take appropriate preventive measures
- GS9. take quick decisions to deal with workplace emergencies/ accidents

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### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Setting up microcontrollers</i>	15	30	-	8
PC1. select an appropriate mechatronics system to solve the given industrial problem(s) and improve productivity	-	-	-	-
PC2. select the appropriate mechatronics components for the installation of the mechatronics system	-	-	-	-
PC3. test the mechatronics components to ensure they are functioning correctly	-	-	-	-
PC4. install the mechatronics control system	-	-	-	-
PC5. program the microprocessor and microcontroller	-	-	-	-
PC6. install the hardware interfacing units of microcontrollers	-	-	-	-
PC7. test the microcontrollers for the correct functioning and carry out troubleshooting for any issues identified	-	-	-	-
<i>Setting up circuits, electrical components and pneumatic systems</i>	15	25	-	7
PC8. select the appropriate power converter circuits and electrical drives for installation	-	-	-	-
PC9. test the electrical components and circuits for correct functioning and compatibility with the mechatronics system	-	-	-	-
PC10. select the appropriate pneumatic values according to the need	-	-	-	-
PC11. perform sequence control and use the logic functions for operating the pneumatic system	-	-	-	-
PC12. use relays in the pneumatic system	-	-	-	-
PC13. monitor the pneumatic fluid by analysing the speed and pressure control sensors	-	-	-	-

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC14. carry out troubleshooting for any issues encountered with the pneumatic system	-	-	-	-
PC15. design the cascade circuits	-	-	-	-
PC16. use the appropriate techniques for programming PLC with the help of Ladder diagram	-	-	-	-
PC17. install the pneumatic power system	-	-	-	-
PC18. follow the relevant case studies for implementing the pneumatic system in the automatic production line	-	-	-	-
PC19. carry out maintenance of the circuits, electrical components and pneumatic system	-	-	-	-
<b>NOS Total</b>	<b>30</b>	<b>55</b>	<b>-</b>	<b>15</b>

## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	CSC/N0507
<b>NOS Name</b>	Configure and install electronic components in the mechatronic systems
<b>Sector</b>	Capital Goods
<b>Sub-Sector</b>	Machine Tools, Moulds and Press Tools, Plastics Manufacturing Machinery, Textile Manufacturing Machinery, Process Plant Machinery, Electrical and Power Machinery, Light Engineering Goods, Defence Equipment
<b>Occupation</b>	Service
<b>NSQF Level</b>	5.5
<b>Credits</b>	5
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	31/01/2024
<b>Next Review Date</b>	31/01/2027
<b>NSQC Clearance Date</b>	31/01/2024

## Qualification Pack

### CSC/N0508: Aligning and testing of electronic sensors and actuators in the mechatronics system

#### Description

This OS unit is about installing sensors and actuators in a mechatronics system along with testing and using them.

#### Scope

The scope covers the following :

- Install, test and use sensors
- Install, test and use actuators

#### Elements and Performance Criteria

##### *Install, test and use sensors*

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

- PC1. select the appropriate contact or contactless sensors for installation as appropriate
- PC2. install the selected sensors such as potentiometer sensor following the standard procedure
- PC3. test the sensors for correct functioning after installation
- PC4. check the working of the strain gauge sensor and measure the torque applied by the motor
- PC5. determine the measurement of position and displacement using the eddy current sensor
- PC6. use the capacitive element by replacing the mechanical buttons
- PC7. use the inductive sensor to measure high precision measurements of displacement, distance, oscillation in harsh industrial environments
- PC8. check the position of the piston in the cylinder by using the pneumatic sensor
- PC9. detect weak infrared irradiation caused by temperature fluctuation by using a pyro-electric sensor
- PC10. measure the electrical potential caused by applying mechanical force to a piezoelectric material by using a piezoelectric sensor
- PC11. carry out repair and maintenance of sensors

##### *Install, test and use actuators*

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

- PC12. select the appropriate analogue or digital actuators to install in electrical and hydraulic systems to control various physical quantities
- PC13. install an actuator with the appropriate properties according to the need
- PC14. use the appropriate interface circuitry to match the actuator to the system driving it
- PC15. test the actuator for correct functioning after installation
- PC16. carry out troubleshooting for any issues identified with the installed hydraulic and pneumatic actuator as per the sketches and block diagrams
- PC17. debounce the keypads to use the mechanical switches as required

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- PC18. install and use the vane motor as per the standard procedure
- PC19. control high-powered circuit using a lower power signal through electro-mechanical and solid- state relays
- PC20. use the stepper motor to convert electrical power into mechanical power
- PC21. create analytical design and development solutions for actuators for different applications
- PC22. carry out repair and maintenance of actuators

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1. use of contact and non-contact type sensors
- KU2. the functions and application of Potentiometer Sensors, Strain Gauge elements, Capacitive elements, Eddy Current, Inductive Proximity Sensors, Light Sensors, Pressure Sensors, Pneumatic Sensors, Pyro electrical Sensors, Piezoelectric Sensors etc.
- KU3. the criteria for selecting sensors for use
- KU4. the classification, need and scope of different types of actuators
- KU5. the process of pneumatic actuation, hydraulic actuation and double-acting
- KU6. use of different types of motors such as vane motors
- KU7. the components of electrical actuation systems such as switching devices, solenoid type devices, drive systems, mechanical switches, keypads, electromechanical and solid-state relays, stepper motors
- KU8. the criteria for the selection of different types of actuators
- KU9. how to carry out repair and maintenance of sensors and actuators in mechatronics system

## Generic Skills (GS)

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

- GS1. maintain the record of work-related observations
- GS2. read the relevant literature to get the latest updates about the field of work
- GS3. communicate politely and professionally
- GS4. listen attentively to understand the information or instructions being given
- GS5. coordinate with the coworkers to achieve the work objectives
- GS6. plan and schedule tasks to achieve work efficiency
- GS7. identify possible disruptions to work and take preventive measures
- GS8. evaluate all possible solutions to a problem to select the best one
- GS9. take quick decisions to deal with workplace emergencies or accidents

## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Install, test and use sensors</i>	15	30	-	8
PC1. select the appropriate contact or contactless sensors for installation as appropriate	-	-	-	-
PC2. install the selected sensors such as potentiometer sensor following the standard procedure	-	-	-	-
PC3. test the sensors for correct functioning after installation	-	-	-	-
PC4. check the working of the strain gauge sensor and measure the torque applied by the motor	-	-	-	-
PC5. determine the measurement of position and displacement using the eddy current sensor	-	-	-	-
PC6. use the capacitive element by replacing the mechanical buttons	-	-	-	-
PC7. use the inductive sensor to measure high precision measurements of displacement, distance, oscillation in harsh industrial environments	-	-	-	-
PC8. check the position of the piston in the cylinder by using the pneumatic sensor	-	-	-	-
PC9. detect weak infrared irradiation caused by temperature fluctuation by using a pyro-electric sensor	-	-	-	-
PC10. measure the electrical potential caused by applying mechanical force to a piezoelectric material by using a piezoelectric sensor	-	-	-	-
PC11. carry out repair and maintenance of sensors	-	-	-	-
<i>Install, test and use actuators</i>	15	25	-	7
PC12. select the appropriate analogue or digital actuators to install in electrical and hydraulic systems to control various physical quantities	-	-	-	-

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. install an actuator with the appropriate properties according to the need	-	-	-	-
PC14. use the appropriate interface circuitry to match the actuator to the system driving it	-	-	-	-
PC15. test the actuator for correct functioning after installation	-	-	-	-
PC16. carry out troubleshooting for any issues identified with the installed hydraulic and pneumatic actuator as per the sketches and block diagrams	-	-	-	-
PC17. debounce the keypads to use the mechanical switches as required	-	-	-	-
PC18. install and use the vane motor as per the standard procedure	-	-	-	-
PC19. control high-powered circuit using a lower power signal through electro-mechanical and solid- state relays	-	-	-	-
PC20. use the stepper motor to convert electrical power into mechanical power	-	-	-	-
PC21. create analytical design and development solutions for actuators for different applications	-	-	-	-
PC22. carry out repair and maintenance of actuators	-	-	-	-
<b>NOS Total</b>	<b>30</b>	<b>55</b>	<b>-</b>	<b>15</b>

## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	CSC/N0508
<b>NOS Name</b>	Aligning and testing of electronic sensors and actuators in the mechatronics system
<b>Sector</b>	Capital Goods
<b>Sub-Sector</b>	Machine Tools, Moulds and Press Tools, Plastics Manufacturing Machinery, Textile Manufacturing Machinery, Process Plant Machinery, Electrical and Power Machinery, Light Engineering Goods, Defence Equipment
<b>Occupation</b>	Service, Design
<b>NSQF Level</b>	5.5
<b>Credits</b>	4
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	31/01/2024
<b>Next Review Date</b>	31/01/2027
<b>NSQC Clearance Date</b>	31/01/2024

## Qualification Pack

### CSC/N0424: Configure and test the microcontroller in the mechatronics system

#### Description

This OS unit is about carrying out the installation of a microcontroller in the mechatronics system, along with testing and using it.

#### Scope

The scope covers the following :

- Installing, testing and using a microcontroller

#### Elements and Performance Criteria

##### *Installing, testing and using a microcontroller*

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

- PC1. select an appropriate microcontroller to install according to the intended application in the mechatronics system
- PC2. install the microcontroller as per the standard procedure and link the function of microcontroller structure in hardware interfacing units of the mechatronics system
- PC3. test the microcontroller after installation to ensure it functions as expected
- PC4. program the microcontroller to execute a specific set of instructions
- PC5. test the functioning of the machine using the mechatronics system
- PC6. carry out interfacing of Analog-To-Digital (A/D) and Digital-To-Analog (D/A) convertors using the appropriate type of microcontroller
- PC7. compose and program stepper motor using the appropriate type of microcontroller
- PC8. compose and program Advanced RISC Machine (ARM) and microprocessor with stepper motor
- PC9. carry out repair and maintenance of microcontrollers

#### Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1. different applications of mechatronics systems
- KU2. structure of different types of microcontroller and their PIN configuration
- KU3. difference between a microprocessor and microcontroller
- KU4. advantages, disadvantages and applications of microcontrollers
- KU5. interfacing of D/A converters and A/D converters with microcontroller
- KU6. application of temperature control stepper motor control
- KU7. the function of microcontroller structure in hardware interfacing units of the mechatronics system
- KU8. instruction sets and programming concepts of microprocessor and microcontroller

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- KU9. programming concepts to interface the hardware units with microprocessor and microcontroller
- KU10. the architecture of PIN configuration, ARM Processor
- KU11. the criteria for selecting an appropriate microcontroller
- KU12. the process of digital to analogue and vice versa conversion in a microcontroller
- KU13. the process of controlling the temperature with temperature sensor using microcontroller circuit
- KU14. the process of interfacing experiments of A/D and D/A using the appropriate type of microprocessor
- KU15. the process of interfacing and programming of Stepper motor using the appropriate type of microcontroller
- KU16. the process of interfacing and programming of the ARM processor with Stepper Motor
- KU17. how to carry out repair and maintenance of microcontrollers in the mechatronics system

## Generic Skills (GS)

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

- GS1. read the relevant literature to get the latest updates about the field of work
- GS2. communicate politely and professionally
- GS3. write work-related notes
- GS4. take quick decisions to deal with any disruptions to work
- GS5. maintain professional relationships with co-workers and clients
- GS6. identify possible disruptions to work and take appropriate preventive measures
- GS7. evaluate all possible solutions to a problem to select the best one
- GS8. apply domain knowledge and experience to improve the quality of work

## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Installing, testing and using a microcontroller</i>	30	55	-	15
PC1. select an appropriate microcontroller to install according to the intended application in the mechatronics system	-	-	-	-
PC2. install the microcontroller as per the standard procedure and link the function of microcontroller structure in hardware interfacing units of the mechatronics system	-	-	-	-
PC3. test the microcontroller after installation to ensure it functions as expected	-	-	-	-
PC4. program the microcontroller to execute a specific set of instructions	-	-	-	-
PC5. test the functioning of the machine using the mechatronics system	-	-	-	-
PC6. carry out interfacing of Analog-To-Digital (A/D) and Digital-To-Analog (D/A) convertors using the appropriate type of microcontroller	-	-	-	-
PC7. compose and program stepper motor using the appropriate type of microcontroller	-	-	-	-
PC8. compose and program Advanced RISC Machine (ARM) and microprocessor with stepper motor	-	-	-	-
PC9. carry out repair and maintenance of microcontrollers	-	-	-	-
<b>NOS Total</b>	<b>30</b>	<b>55</b>	<b>-</b>	<b>15</b>

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### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	CSC/N0424
<b>NOS Name</b>	Configure and test the microcontroller in the mechatronics system
<b>Sector</b>	Capital Goods
<b>Sub-Sector</b>	Machine Tools, Dies, Moulds and Press Tools, Textile Manufacturing Machinery, Process Plant Machinery, Plastics Manufacturing Machinery, Electrical and Power Machinery, Light Engineering Goods, Defence Equipment
<b>Occupation</b>	Service
<b>NSQF Level</b>	5.5
<b>Credits</b>	4
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	31/01/2024
<b>Next Review Date</b>	31/01/2027
<b>NSQC Clearance Date</b>	31/01/2024

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### 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

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### 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	-	-	-	-

### Qualification Pack

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>	<b>8</b>	<b>20</b>	-	-
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>	<b>8</b>	<b>10</b>	-	-

### Qualification Pack

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	-	-	-	-
<b>NOS Total</b>	<b>30</b>	<b>70</b>	-	-

## 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	01/10/2025
Next Review Date	01/10/2030
NSQC Clearance Date	01/10/2025

## 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>	<b>8</b>	<b>10</b>	-	-
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	-	-	-	-
<b>NOS Total</b>	<b>15</b>	<b>20</b>	-	-

## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	CSC/N0505
<b>NOS Name</b>	Follow health, safety and environment guidelines at workplace
<b>Sector</b>	Capital Goods
<b>Sub-Sector</b>	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
<b>Occupation</b>	Service
<b>NSQF Level</b>	5
<b>Credits</b>	1
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	01/10/2025
<b>Next Review Date</b>	01/10/2030
<b>NSQC Clearance Date</b>	01/10/2025

## 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 &amp; 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>	<b>2</b>	<b>2</b>	-	-
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 &amp; Inclusion</i>	<b>1</b>	<b>2</b>	-	-
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>	<b>2</b>	<b>3</b>	-	-
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>	<b>3</b>	<b>4</b>	-	-
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 &amp; 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	-	-	-	-
<b>NOS Total</b>	<b>20</b>	<b>30</b>	-	-

## 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	07/10/2025
Next Review Date	07/10/2028
NSQC Clearance Date	07/10/2025

## Assessment Guidelines and Assessment Weightage

### Assessment Guidelines

#### 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 %

## Qualification Pack

aggregate marks to successfully clear the assessment.

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.)

**Minimum Passing % at NOS Level: 70**

(Please note: A Trainee must score the minimum percentage for each NOS separately as well as on the QP as a whole.)

## Assessment Weightage

Compulsory NOS

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
CSC/N0507.Configure and install electronic components in the mechatronic systems	30	55	-	15	100	21
CSC/N0508.Aligning and testing of electronic sensors and actuators in the mechatronics system	30	55	-	15	100	21
CSC/N0424.Configure and test the microcontroller in the mechatronics system	30	55	-	15	100	21
CSC/N1339.Collaboratively coordinate with the team	30	70	-	-	100	21
CSC/N0505.Follow health, safety and environment guidelines at workplace	15	20	-	-	35	8
DGT/VSQ/N0102.Employability Skills (60 Hours)	20	30	-	-	50	8
<b>Total</b>	<b>155</b>	<b>285</b>	<b>-</b>	<b>45</b>	<b>485</b>	<b>100</b>

## 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

<b>Sector</b>	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.
<b>Sub-sector</b>	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
<b>Occupation</b>	Occupation is a set of job roles, which perform similar/ related set of functions in an industry.
<b>Job role</b>	Job role defines a unique set of functions that together form a unique employment opportunity in an organisation.
<b>Occupational Standards (OS)</b>	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.
<b>Performance Criteria (PC)</b>	Performance Criteria (PC) are statements that together specify the standard of performance required when carrying out a task.
<b>National Occupational Standards (NOS)</b>	NOS are occupational standards which apply uniquely in the Indian context.
<b>Qualifications Pack (QP)</b>	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.
<b>Unit Code</b>	Unit code is a unique identifier for an Occupational Standard, which is denoted by an 'N'
<b>Unit Title</b>	Unit title gives a clear overall statement about what the incumbent should be able to do.
<b>Description</b>	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.
<b>Scope</b>	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.

## Qualification Pack

<b>Knowledge and Understanding (KU)</b>	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.
<b>Organisational Context</b>	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.
<b>Technical Knowledge</b>	Technical knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
<b>Core Skills/ Generic Skills (GS)</b>	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.
<b>Electives</b>	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.
<b>Options</b>	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.