

## Qualification Pack



# Cathodic Protection Technician

QP Code: HYC/Q6306

Version: 2.0

NSQF Level: 4

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## Qualification Pack

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### HYC/Q6306: Cathodic Protection Technician

#### Brief Job Description

The cathodic protection technician is responsible for the prevention of metallic high-pressure hydrocarbon product pipeline/structure against the corrosion. The individual identifies the corrosion/damage in the pipeline and carry out the installation, commissioning and maintenance of the cathodic protection system. The person makes sure that the system is functioning correctly and providing adequate corrosion protection

#### Personal Attributes

The individual should have good sense of responsibility, a good organizer and time keeper. The person should have the ability to work independently.

#### Applicable National Occupational Standards (NOS)

##### Compulsory NOS:

1. [HYC/N6312: Prepare cathodic protection system, tools and material for testing and maintenance activity](#)
2. [HYC/N6313: Carry out cathodic protection survey and testing for identifying damage in pipeline](#)
3. [HYC/N6314: Carry out repair and maintenance of pipelines using Cathodic Protection Techniques](#)
4. [HYC/N9301: Working Effectively in a team](#)
5. [HYC/N9302: Maintain health, safety and security procedures](#)
6. [DGT/VSQ/N0102: Employability Skills \(60 Hours\)](#)

#### Qualification Pack (QP) Parameters

<b>Sector</b>	Hydrocarbon
<b>Sub-Sector</b>	Midstream
<b>Occupation</b>	Operations - Oil and Gas pipeline, Operations - Oil and Gas pipeline
<b>Country</b>	India
<b>NSQF Level</b>	4

### Qualification Pack

<b>Credits</b>	22
<b>Aligned to NCO/ISCO/ISIC Code</b>	NCO/2015-NII
<b>Minimum Educational Qualification &amp; Experience</b>	10th grade pass (with 2 years of relevant experience) OR 12th grade Pass OR 10th grade pass (plus 2-year of National Trade Certificate (NTC)) OR Completed 2nd year of the 3-year diploma after 10 (and pursuing regular Diploma)
<b>Minimum Level of Education for Training in School</b>	10th Class
<b>Pre-Requisite License or Training</b>	NA
<b>Minimum Job Entry Age</b>	18 Years
<b>Last Reviewed On</b>	NA
<b>Next Review Date</b>	17/11/2025
<b>NSQC Approval Date</b>	17/11/2022
<b>Version</b>	2.0
<b>Reference code on NQR</b>	2022/HYC/HSSCI/06766
<b>NQR Version</b>	2.0

**Remarks:**

NA
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## Qualification Pack

# HYC/N6312: Prepare cathodic protection system, tools and material for testing and maintenance activity

## Description

This unit is about preparing for operational and maintenance activity required to be carried out before conducting cathodic protection

## Scope

The scope covers the following :

- Prepare for operational and maintenance activities

## Elements and Performance Criteria

### *Prepare for operational and maintenance activities*

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

- PC1.** obtain work permit to access the site location
- PC2.** assemble CP system and other necessary equipment required for testing and maintenance activity
- PC3.** check proper functioning of CP system and other equipment to ensure smooth operation
- PC4.** conduct adjustments in the CP system and other equipment, if any abnormalities have been found
- PC5.** compile and record the results of adjustments to optimise the integrity of equipment

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** the basic principle of corrosion and its protection
- KU2.** the importance of calibration of tools and instruments
- KU3.** the basic principle of electrical and circuit system
- KU4.** the function of tools and instrument used for testing and maintenance
- KU5.** the importance of personal protective equipment
- KU6.** the Bureau of Indian Standards (BIS) 8062-2006 standards

## Generic Skills (GS)

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

- GS1.** read and interpret the data
- GS2.** write and prepare report in prescribed format
- GS3.** communicate effectively with team members



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- GS4.** plan the work to meet the deadline
- GS5.** apply problem solving approaches in different situations
- GS6.** assess complexity and criticality of task

## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Prepare for operational and maintenance activities</i>	<b>20</b>	<b>30</b>	-	-
<b>PC1.</b> obtain work permit to access the site location	3	4	-	-
<b>PC2.</b> assemble CP system and other necessary equipment required for testing and maintenance activity	5	8	-	-
<b>PC3.</b> check proper functioning of CP system and other equipment to ensure smooth operation	4	7	-	-
<b>PC4.</b> conduct adjustments in the CP system and other equipment, if any abnormalities have been found	3	4	-	-
<b>PC5.</b> compile and record the results of adjustments to optimise the integrity of equipment	5	7	-	-
<b>NOS Total</b>	<b>20</b>	<b>30</b>	-	-

## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	HYC/N6312
<b>NOS Name</b>	Prepare cathodic protection system, tools and material for testing and maintenance activity
<b>Sector</b>	Hydrocarbon
<b>Sub-Sector</b>	Midstream
<b>Occupation</b>	Operations - Oil and Gas pipeline, Operations - Oil and Gas pipeline
<b>NSQF Level</b>	4
<b>Credits</b>	3.5
<b>Version</b>	2.0
<b>Last Reviewed Date</b>	NA
<b>Next Review Date</b>	17/11/2025
<b>NSQC Clearance Date</b>	17/11/2022



## Qualification Pack

# HYC/N6313: Carry out cathodic protection survey and testing for identifying damage in pipeline

## Description

This unit is about identifying damages on pipeline through different CP System survey and testing methods.

## Scope

The scope covers the following :

- Closed Interval Potential Logging (CIPL) Survey
- Coating integrity Survey
- Electrical isolation testing
- Detection/Testing of DC/AC Interference
- Electrical /electrolytic testing

## Elements and Performance Criteria

### *Closed Interval Potential Logging (CIPL) Survey*

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

- PC1.** locate pipeline using pipeline locator
- PC2.** conduct survey at required interval along the pipeline as per the approved procedure
- PC3.** measure the polarized potential difference between the pipeline and an electrode on the ground
- PC4.** record the pipe to soil potential reading and compare it with the CP criterion to ensure that adequate levels of CP are reaching to the pipeline
- PC5.** determine the CIPL survey reading to identify the defects

### *Coating integrity Survey*

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

- PC6.** Identify the probable location of pipeline having defect based on the readings of Close Interval Potential Logging (CIPL) Survey
- PC7.** conduct Direct Current Voltage Gradient (DCVG) Survey at probable coating defect location
- PC8.** walk above pipeline with DCVG meter and two electrodes
- PC9.** measure the change in flow of electrical current through the ground
- PC10.** record the location where change in frequency is observed for further investigation

### *Electrical isolation testing*

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

- PC11.** perform visual inspection
- PC12.** measure the pipe-to-soil potential on both sides of the isolation device and confirm that the difference is adequate to assure positive isolation
- PC13.** check the continuity between both sides of the isolation device and confirm that the electric continuity does not exist

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**PC14.** measure electrical insulation by clamp-on ammeter, continuous DC or pulsed DC holiday detector

**PC15.** ensure the joint/flange is insulated for minimum of 1 MΩ for new flange

**PC16.** report to maintenance supervisor in case short circuit is observed

### *Detection/Testing of DC/AC Interference*

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

**PC17.** check the interfering pipeline/metallic structure near cathodic protected buried pipeline

**PC18.** carry out close interval potential survey on affected pipeline by interrupting current source of protected pipeline (interfering pipeline)

**PC19.** record data by digital voltmeter in both ON and OFF state (only protected pipeline current source is interrupted)

**PC20.** measure the recorded data as per Bureau of Indian Standards (BIS) 8062

### *Electrical /electrolytic testing*

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

**PC21.** measure the flow of current from anode to the pipe using voltmeter

**PC22.** use galvanic series for predicting galvanic corrosion performance

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

**KU1.** the importance of cathodic protection survey

**KU2.** the different types of survey method

**KU3.** the types of damages and corrosion found on oil and gas pipeline

**KU4.** the basic knowledge of earthing

**KU5.** the use of GIS system to identify pipeline network and GPS location based data recording for TLP

## Generic Skills (GS)

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

**GS1.** read and interpret survey data and information correctly

**GS2.** communicate effectively with team members

**GS3.** plan the work to meet the deadline

**GS4.** apply problem solving approaches in different situations

**GS5.** assess complexity and criticality of task

## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Closed Interval Potential Logging (CIPL) Survey</i>	<b>6</b>	<b>17</b>	-	-
<b>PC1.</b> locate pipeline using pipeline locater	1	3	-	-
<b>PC2.</b> conduct survey at required interval along the pipeline as per the approved procedure	2	4	-	-
<b>PC3.</b> measure the polarized potential difference between the pipeline and an electrode on the ground	1	3	-	-
<b>PC4.</b> record the pipe to soil potential reading and compare it with the CP criterion to ensure that adequate levels of CP are reaching to the pipeline	1	4	-	-
<b>PC5.</b> determine the CIPL survey reading to identify the defects	1	3	-	-
<i>Coating integrity Survey</i>	<b>7</b>	<b>17</b>	-	-
<b>PC6.</b> Identify the probable location of pipeline having defect based on the readings of Close Interval Potential Logging (CIPL) Survey	1	3	-	-
<b>PC7.</b> conduct Direct Current Voltage Gradient (DCVG) Survey at probable coating defect location	2	4	-	-
<b>PC8.</b> walk above pipeline with DCVG meter and two electrodes	1	3	-	-
<b>PC9.</b> measure the change in flow of electrical current through the ground	2	4	-	-
<b>PC10.</b> record the location where change in frequency is observed for further investigation	1	3	-	-
<i>Electrical isolation testing</i>	<b>8</b>	<b>18</b>	-	-
<b>PC11.</b> perform visual inspection	1	3	-	-
<b>PC12.</b> measure the pipe-to-soil potential on both sides of the isolation device and confirm that the difference is adequate to assure positive isolation	1	3	-	-

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC13.</b> check the continuity between both sides of the isolation device and confirm that the electric continuity does not exist	2	3	-	-
<b>PC14.</b> measure electrical insulation by clamp-on ammeter, continuous DC or pulsed DC holiday detector	1	3	-	-
<b>PC15.</b> ensure the joint/flange is insulated for minimum of 1 MΩ for new flange	2	3	-	-
<b>PC16.</b> report to maintenance supervisor in case short circuit is observed	1	3	-	-
<i>Detection/Testing of DC/AC Interference</i>	<b>6</b>	<b>12</b>	-	-
<b>PC17.</b> check the interfering pipeline/metallic structure near cathodic protected buried pipeline	1	3	-	-
<b>PC18.</b> carry out close interval potential survey on affected pipeline by interrupting current source of protected pipeline (interfering pipeline)	2	3	-	-
<b>PC19.</b> record data by digital voltmeter in both ON and OFF state (only protected pipeline current source is interrupted)	2	3	-	-
<b>PC20.</b> measure the recorded data as per Bureau of Indian Standards (BIS) 8062	1	3	-	-
<i>Electrical /electrolytic testing</i>	<b>3</b>	<b>6</b>	-	-
<b>PC21.</b> measure the flow of current from anode to the pipe using voltmeter	1	3	-	-
<b>PC22.</b> use galvanic series for predicting galvanic corrosion performance	2	3	-	-
<b>NOS Total</b>	<b>30</b>	<b>70</b>	-	-

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### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	HYC/N6313
<b>NOS Name</b>	Carry out cathodic protection survey and testing for identifying damage in pipeline
<b>Sector</b>	Hydrocarbon
<b>Sub-Sector</b>	Midstream
<b>Occupation</b>	Operations - Oil and Gas pipeline, Operations - Oil and Gas pipeline
<b>NSQF Level</b>	4
<b>Credits</b>	7.5
<b>Version</b>	2.0
<b>Last Reviewed Date</b>	NA
<b>Next Review Date</b>	17/11/2025
<b>NSQC Clearance Date</b>	17/11/2022

## Qualification Pack

# HYC/N6314: Carry out repair and maintenance of pipelines using Cathodic Protection Techniques

## Description

This unit is about carrying out repair and maintenance of pipeline through cathodic protection technique.

## Scope

The scope covers the following :

- Identify suitable CP method
- Making cable connection from test station to pipeline using thermit weld/pin brazing
- Respond to problems
- Reporting

## Elements and Performance Criteria

### *Identify suitable CP method*

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

- PC1.** review the findings on the basis of survey and testing to determine system abnormalities and maintenance requirement for the continued operation of the system
- PC2.** carry out suitable CP method from sacrificial anodic protection or impressed current cathodic protection based on the requirement
- PC3.** connect a highly anodic metal with the base metal to make base metal cathode under sacrificial anodic protection method
- PC4.** connect positive terminal of battery to backfill and negative terminal to the base metal to make base metal cathode under Impressed Current Cathodic Protection (ICCP) method
- PC5.** calculate the data for carrying out adjustments and maintenance of surface where abnormalities are found

### *Making cable connection from test station to pipeline using thermit weld/pin brazing*

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

- PC6.** connect cable from test station to pipe using thermit weld/pin brazing
- PC7.** remove the coating of pipe using abrasion tool
- PC8.** place copper cable on abraded pipe connected to test station
- PC9.** place graphite mould at the end of copper cable
- PC10.** insert thermit mixture powder into the mould
- PC11.** insert ignite powder into the mould
- PC12.** ignite the inserted powder using propane torch
- PC13.** remove mould and check the quality of connection by hammer blow
- PC14.** utilize the material required during repair and maintenance activity efficiently to minimize the waste and store the unused or reusable material

### *Respond to problems*

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

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- PC15.** identify the possible problem during cathodic protection process or equipment
- PC16.** determine the possible cause of fault and action needed during maintenance of cathodic protection activity
- PC17.** apply suitable solution during maintenance of cathodic protection activity

### Reporting

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

- PC18.** maintain cathodic protection log book
- PC19.** report CP work completion to supervisor
- PC20.** report un-attended problem to the competent authority

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** the importance of cathodic protection survey
- KU2.** the different types of survey method
- KU3.** the types of cathodic protection
- KU4.** the types of damages and corrosion found on oil and gas pipeline
- KU5.** ways of efficiently utilizing the material for conducting maintenance of pipeline through cathodic protection technique

## Generic Skills (GS)

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

- GS1.** read and interpret survey data and current for protecting metal from corrosion
- GS2.** write and prepare report in prescribed format
- GS3.** communicate effectively with team members
- GS4.** plan the work to meet the deadline
- GS5.** apply problem solving approaches in different situations
- GS6.** assess complexity and criticality of task

## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Identify suitable CP method</i>	<b>5</b>	<b>19</b>	-	-
<b>PC1.</b> review the findings on the basis of survey and testing to determine system abnormalities and maintenance requirement for the continued operation of the system	1	4	-	-
<b>PC2.</b> carry out suitable CP method from sacrificial anodic protection or impressed current cathodic protection based on the requirement	1	4	-	-
<b>PC3.</b> connect a highly anodic metal with the base metal to make base metal cathode under sacrificial anodic protection method	1	4	-	-
<b>PC4.</b> connect positive terminal of battery to backfill and negative terminal to the base metal to make base metal cathode under Impressed Current Cathodic Protection (ICCP) method	1	4	-	-
<b>PC5.</b> calculate the data for carrying out adjustments and maintenance of surface where abnormalities are found	1	3	-	-
<i>Making cable connection from test station to pipeline using thermit weld/pin brazing</i>	<b>15</b>	<b>32</b>	-	-
<b>PC6.</b> connect cable from test station to pipe using thermit weld/pin brazing	2	4	-	-
<b>PC7.</b> remove the coating of pipe using abrasion tool	2	4	-	-
<b>PC8.</b> place copper cable on abraded pipe connected to test station	2	3	-	-
<b>PC9.</b> place graphite mould at the end of copper cable	2	4	-	-
<b>PC10.</b> insert thermit mixture powder into the mould	2	4	-	-
<b>PC11.</b> insert ignite powder into the mould	1	3	-	-
<b>PC12.</b> ignite the inserted powder using propane torch	2	4	-	-



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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC13.</b> remove mould and check the quality of connection by hammer blow	1	4	-	-
<b>PC14.</b> utilize the material required during repair and maintenance activity efficiently to minimize the waste and store the unused or reusable material	1	2	-	-
<i>Respond to problems</i>	<b>6</b>	<b>10</b>	-	-
<b>PC15.</b> identify the possible problem during cathodic protection process or equipment	2	4	-	-
<b>PC16.</b> determine the possible cause of fault and action needed during maintenance of cathodic protection activity	2	3	-	-
<b>PC17.</b> apply suitable solution during maintenance of cathodic protection activity	2	3	-	-
<i>Reporting</i>	<b>4</b>	<b>9</b>	-	-
<b>PC18.</b> maintain cathodic protection log book	2	3	-	-
<b>PC19.</b> report CP work completion to supervisor	1	3	-	-
<b>PC20.</b> report un-attended problem to the competent authority	1	3	-	-
<b>NOS Total</b>	<b>30</b>	<b>70</b>	-	-

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### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	HYC/N6314
<b>NOS Name</b>	Carry out repair and maintenance of pipelines using Cathodic Protection Techniques
<b>Sector</b>	Hydrocarbon
<b>Sub-Sector</b>	Midstream
<b>Occupation</b>	Operations - Oil and Gas pipeline, Operations - Oil and Gas pipeline
<b>NSQF Level</b>	4
<b>Credits</b>	4
<b>Version</b>	2.0
<b>Last Reviewed Date</b>	NA
<b>Next Review Date</b>	17/11/2025
<b>NSQC Clearance Date</b>	17/11/2022

## Qualification Pack

### HYC/N9301: Working Effectively in a team

#### Description

This unit is about working effectively within a team.

#### Scope

The scope covers the following :

- Effective team work

#### Elements and Performance Criteria

##### *Effective team work*

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

- PC1.** maintain clear communication with colleagues
- PC2.** pass on information to colleagues in line with organisational requirements
- PC3.** provide support to the team members
- PC4.** respect the colleagues
- PC5.** fulfil commitments made to colleagues
- PC6.** inform team members timely, if timelines can't be met
- PC7.** take the necessary initiatives to resolve the issues while working in team
- PC8.** adopt gender neutral behaviour while interacting with colleagues
- PC9.** offer assistance to a person with disability (PWD), only if required

#### Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** the organization policies and procedures related to team performance
- KU2.** the importance of effective communication and establishing good working relationships with colleagues
- KU3.** the importance of creating an environment of trust and mutual respect
- KU4.** the implications of own work on the work and schedule of others
- KU5.** the standard practices in organisation w.r.t communication at various levels
- KU6.** the personal responsibility for completing the task in time
- KU7.** importance of gender equality
- KU8.** importance of showing empathy while interacting with a PwD

#### Generic Skills (GS)

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

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- GS1.** communicate effectively in writing
- GS2.** read instructions, guidelines/procedures
- GS3.** work in a disciplined manner for meeting commitments and deadline
- GS4.** how to plan and prioritise the work
- GS5.** the importance of consistent and reliable services
- GS6.** apply problem solving approaches in different situations
- GS7.** apply balanced judgments to different situations

## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Effective team work</i>	<b>20</b>	<b>30</b>	-	-
<b>PC1.</b> maintain clear communication with colleagues	2	3	-	-
<b>PC2.</b> pass on information to colleagues in line with organisational requirements	2	3	-	-
<b>PC3.</b> provide support to the team members	2	4	-	-
<b>PC4.</b> respect the colleagues	3	4	-	-
<b>PC5.</b> fulfil commitments made to colleagues	2	3	-	-
<b>PC6.</b> inform team members timely, if timelines can't be met	2	4	-	-
<b>PC7.</b> take the necessary initiatives to resolve the issues while working in team	3	4	-	-
<b>PC8.</b> adopt gender neutral behaviour while interacting with colleagues	2	2	-	-
<b>PC9.</b> offer assistance to a person with disability (PWD), only if required	2	3	-	-
<b>NOS Total</b>	<b>20</b>	<b>30</b>	-	-

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### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	HYC/N9301
<b>NOS Name</b>	Working Effectively in a team
<b>Sector</b>	Hydrocarbon
<b>Sub-Sector</b>	Generic
<b>Occupation</b>	Generic, Generic
<b>NSQF Level</b>	4
<b>Credits</b>	2
<b>Version</b>	3.0
<b>Last Reviewed Date</b>	NA
<b>Next Review Date</b>	17/11/2025
<b>NSQC Clearance Date</b>	17/11/2022

## Qualification Pack

### HYC/N9302: Maintain health, safety and security procedures

#### Description

This unit is about maintaining health, safety and security procedure at workplace. It covers responsibilities towards self, others, assets and the environment.

#### Scope

The scope covers the following :

- Follow health and safety measures
- Follow safety procedures during emergency

#### Elements and Performance Criteria

##### *Follow health and safety measures*

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

- PC1.** use protective clothing/equipment such as face mask, hand gloves, goggle etc for specific tasks and work conditions
- PC2.** identify the people responsible for maintaining health and safety in the workplace
- PC3.** identify possible causes of risk or accident in the workplace
- PC4.** follow safe working practices while dealing with hazards to ensure the safety of self and others
- PC5.** lift heavy objects safely using correct procedures
- PC6.** follow safety signages
- PC7.** maintain hands hygiene by washing hand frequently and thoroughly with soap and water or alcohol-based hand rub
- PC8.** inform the concerned person of any illness related to self and others
- PC9.** maintain workplace hygiene by disinfecting the equipment and tools regularly

##### *Follow safety procedures during emergency*

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

- PC10.** respond promptly and appropriately to an accident or in an emergency situation
- PC11.** use appropriate fire extinguishers for different types of fires correctly
- PC12.** follow appropriate rescue techniques during fire hazard
- PC13.** follow good housekeeping practice in order to prevent fire hazards
- PC14.** inform fire safety department about any near-miss incidents in the work place
- PC15.** provide appropriate first aid to victims in an emergency situation
- PC16.** follow the applicable regulations and codes as per safety standard
- PC17.** prepare written accident/incident report and share with the concerned officer/department

#### Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

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- KU1.** company's policies on personnel management and duty reporting procedure
- KU2.** reporting structure within organization
- KU3.** health and safety hazards commonly affecting the work environment and related precautions
- KU4.** importance of maintaining personal hygiene using PPE kit, sanitizer and soap
- KU5.** importance of maintaining workplace hygiene
- KU6.** preventative and remedial actions to be taken in the case of exposure to toxic materials
- KU7.** importance of using protective clothing/equipment while working
- KU8.** various causes of fire
- KU9.** techniques of using different types of fire extinguishers
- KU10.** different materials used for extinguishing fire
- KU11.** various types of safety signs and their significance

## Generic Skills (GS)

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

- GS1.** communicate effectively by writing
- GS2.** read instructions, guidelines/procedures and reports
- GS3.** identify and report potential sources of danger
- GS4.** how to plan the work to meet the deadline
- GS5.** the importance of on time services
- GS6.** apply problem solving approaches in different situations
- GS7.** apply balanced judgments in different situations



## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Follow health and safety measures</i>	<b>9</b>	<b>15</b>	-	-
<b>PC1.</b> use protective clothing/equipment such as face mask, hand gloves, goggle etc for specific tasks and work conditions	1	2	-	-
<b>PC2.</b> identify the people responsible for maintaining health and safety in the workplace	1	-	-	-
<b>PC3.</b> identify possible causes of risk or accident in the workplace	1	2	-	-
<b>PC4.</b> follow safe working practices while dealing with hazards to ensure the safety of self and others	1	2	-	-
<b>PC5.</b> lift heavy objects safely using correct procedures	1	2	-	-
<b>PC6.</b> follow safety signages	1	2	-	-
<b>PC7.</b> maintain hands hygiene by washing hand frequently and thoroughly with soap and water or alcohol-based hand rub	1	2	-	-
<b>PC8.</b> inform the concerned person of any illness related to self and others	1	1	-	-
<b>PC9.</b> maintain workplace hygiene by disinfecting the equipment and tools regularly	1	2	-	-
<i>Follow safety procedures during emergency</i>	<b>11</b>	<b>15</b>	-	-
<b>PC10.</b> respond promptly and appropriately to an accident or in an emergency situation	1	2	-	-
<b>PC11.</b> use appropriate fire extinguishers for different types of fires correctly	2	2	-	-
<b>PC12.</b> follow appropriate rescue techniques during fire hazard	1	2	-	-
<b>PC13.</b> follow good housekeeping practice in order to prevent fire hazards	1	1	-	-

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC14.</b> inform fire safety department about any near-miss incidents in the work place	2	2	-	-
<b>PC15.</b> provide appropriate first aid to victims in an emergency situation	1	2	-	-
<b>PC16.</b> follow the applicable regulations and codes as per safety standard	1	2	-	-
<b>PC17.</b> prepare written accident/incident report and share with the concerned officer/department	2	2	-	-
<b>NOS Total</b>	<b>20</b>	<b>30</b>	-	-

## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	HYC/N9302
<b>NOS Name</b>	Maintain health, safety and security procedures
<b>Sector</b>	Hydrocarbon
<b>Sub-Sector</b>	Generic
<b>Occupation</b>	Generic, Generic
<b>NSQF Level</b>	4
<b>Credits</b>	2
<b>Version</b>	3.0
<b>Last Reviewed Date</b>	NA
<b>Next Review Date</b>	17/11/2025
<b>NSQC Clearance Date</b>	17/11/2022

## 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:

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- 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.

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**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

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- 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>	<b>1</b>	<b>1</b>	-	-
<b>PC1.</b> identify employability skills required for jobs in various industries	-	-	-	-
<b>PC2.</b> identify and explore learning and employability portals	-	-	-	-
<i>Constitutional values - Citizenship</i>	<b>1</b>	<b>1</b>	-	-
<b>PC3.</b> 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.	-	-	-	-
<b>PC4.</b> follow environmentally sustainable practices	-	-	-	-
<i>Becoming a Professional in the 21st Century</i>	<b>2</b>	<b>4</b>	-	-
<b>PC5.</b> recognize the significance of 21st Century Skills for employment	-	-	-	-
<b>PC6.</b> 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>	<b>2</b>	<b>3</b>	-	-
<b>PC7.</b> use basic English for everyday conversation in different contexts, in person and over the telephone	-	-	-	-
<b>PC8.</b> read and understand routine information, notes, instructions, mails, letters etc. written in English	-	-	-	-
<b>PC9.</b> write short messages, notes, letters, e-mails etc. in English	-	-	-	-
<i>Career Development &amp; Goal Setting</i>	<b>1</b>	<b>2</b>	-	-



### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC10.</b> understand the difference between job and career	-	-	-	-
<b>PC11.</b> prepare a career development plan with short- and long-term goals, based on aptitude	-	-	-	-
<i>Communication Skills</i>	<b>2</b>	<b>2</b>	-	-
<b>PC12.</b> follow verbal and non-verbal communication etiquette and active listening techniques in various settings	-	-	-	-
<b>PC13.</b> work collaboratively with others in a team	-	-	-	-
<i>Diversity &amp; Inclusion</i>	<b>1</b>	<b>2</b>	-	-
<b>PC14.</b> communicate and behave appropriately with all genders and PwD	-	-	-	-
<b>PC15.</b> 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>	-	-
<b>PC16.</b> select financial institutions, products and services as per requirement	-	-	-	-
<b>PC17.</b> carry out offline and online financial transactions, safely and securely	-	-	-	-
<b>PC18.</b> identify common components of salary and compute income, expenses, taxes, investments etc	-	-	-	-
<b>PC19.</b> 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>	-	-
<b>PC20.</b> operate digital devices and carry out basic internet operations securely and safely	-	-	-	-
<b>PC21.</b> use e- mail and social media platforms and virtual collaboration tools to work effectively	-	-	-	-
<b>PC22.</b> 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>	<b>2</b>	<b>3</b>	-	-
<b>PC23.</b> identify different types of Entrepreneurship and Enterprises and assess opportunities for potential business through research	-	-	-	-
<b>PC24.</b> develop a business plan and a work model, considering the 4Ps of Marketing Product, Price, Place and Promotion	-	-	-	-
<b>PC25.</b> identify sources of funding, anticipate, and mitigate any financial/ legal hurdles for the potential business opportunity	-	-	-	-
<i>Customer Service</i>	<b>1</b>	<b>2</b>	-	-
<b>PC26.</b> identify different types of customers	-	-	-	-
<b>PC27.</b> identify and respond to customer requests and needs in a professional manner.	-	-	-	-
<b>PC28.</b> follow appropriate hygiene and grooming standards	-	-	-	-
<i>Getting ready for apprenticeship &amp; Jobs</i>	<b>2</b>	<b>3</b>	-	-
<b>PC29.</b> create a professional Curriculum vitae (Résumé)	-	-	-	-
<b>PC30.</b> search for suitable jobs using reliable offline and online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals, respectively	-	-	-	-
<b>PC31.</b> apply to identified job openings using offline /online methods as per requirement	-	-	-	-
<b>PC32.</b> answer questions politely, with clarity and confidence, during recruitment and selection	-	-	-	-
<b>PC33.</b> 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

<b>NOS Code</b>	DGT/VSQ/N0102
<b>NOS Name</b>	Employability Skills (60 Hours)
<b>Sector</b>	Cross Sectoral
<b>Sub-Sector</b>	Professional Skills
<b>Occupation</b>	Employability
<b>NSQF Level</b>	4
<b>Credits</b>	2
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	NA
<b>Next Review Date</b>	31/03/2025
<b>NSQC Clearance Date</b>	31/03/2022

## 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
HYC/N6312.Prepare cathodic protection system, tools and material for testing and maintenance activity	20	30	0	0	50	15
HYC/N6313.Carry out cathodic protection survey and testing for identifying damage in pipeline	30	70	0	0	100	20
HYC/N6314.Carry out repair and maintenance of pipelines using Cathodic Protection Techniques	30	70	0	0	100	20
HYC/N9301.Working Effectively in a team	20	30	0	0	50	15
HYC/N9302.Maintain health, safety and security procedures	20	30	0	0	50	15
DGT/VSQ/N0102.Employability Skills (60 Hours)	20	30	-	-	50	15
<b>Total</b>	<b>140</b>	<b>260</b>	<b>-</b>	<b>-</b>	<b>400</b>	<b>100</b>

## Qualification Pack

### Acronyms

<b>NOS</b>	National Occupational Standard(s)
<b>NSQF</b>	National Skills Qualifications Framework
<b>QP</b>	Qualifications Pack
<b>TVET</b>	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.

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<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.