Qualification Pack

Instrumentation Technician (Control Valve)

QP Code: IAS/Q3001

Version: 8.0

NSQF Level: 4

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Qualification Pack

IAS/Q3001: Instrumentation Technician (Control Valve)

Brief Job Description

Ensuring proper operation, availability, performance and maintenance of Control Valve and Control Valve accessories in rotational or general shift duties and attending to emergency calls.

Personal Attributes

The individual must be self-disciplined assertive, a team player action-orientated, possess analytical skills and problem-solving ability, good inter personnel skills, and the ability to work under pressure.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. IAS/N0102: Site Management Process Control
2. IAS/N0101: Preventive & Predictive Maintenance Control Valve
3. IAS/N0100: Maintain Control Valve Health
4. IAS/N0103: Task Reporting - Process Control
5. IAS/N0104: Corrective Maintenance - Control Valve
6. IAS/N0105: Safety, Health and Environment Process Control
7. IAS/N9001: Work effectively with teams
8. DGT/VSQ/N0102: Employability Skills (60 Hours)

Qualification Pack (QP) Parameters

Sector	Instrumentation
Sub-Sector	Instrumentation & Automation
Occupation	Maintenance
Country	India
NSQF Level	4

Credits	14
Aligned to NCO/ISCO/ISIC Code	NCO-2015/3111.9900
Minimum Educational Qualification & Experience	10th grade pass plus 1-year NTC/ NAC (relevant field) OR 10th Class with 1 Year of experience relevant field OR Completed 1st year of 3-year diploma (after 10th) and pursuing regular diploma (relevant field) OR Previous relevant Qualification of NSQF Level (NSQF Level 3) with 1 Year of experience relevant field
Minimum Level of Education for Training in School	
Pre-Requisite License or Training	a. Training course on Control Valve Maintenance (6 weeks duration)b. Practical hands-on training (4 weeks duration)
Minimum Job Entry Age	18 Years
Last Reviewed On	NA
Next Review Date	26/05/2025
NSQC Approval Date	26/05/2022
Version	8.0
Reference code on NQR	2022/ETR/IASC/06497
NQR Version	8

IAS/N0102: Site Management Process Control

Description

Coordinate work related to audits by Statutory Authorities, Vendors performing Service contract and coordination work with other departments during opportunistic / annual shut downs.

Scope

The scope covers the following :

- This Unit Task covers the following :
- Statutory Audits
- Service Contract vendor interaction
- Inspection & Test Reports
- Shut downs
- Store procedures

Elements and Performance Criteria

Support Statutory Audits

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

PC1. Support the plant authorities during inspection - such as IBR inspection formalities and stamping of IBR items including Control Valve and associated accessories which fall in the IBR area

Interact with Service contract vendors

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

PC2. Perform formalities of the site visit of the representative of the Service Contract vendor for Control Valve. Locate and identify the Control Valve and accessories to be covered by the vendor.

Prepare Inspection &Test Reports

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

PC3. Prepare the appropriate Inspection and Test reports

Support Shut Down procedures

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

PC4. Support formalities and coordination relating to Process and Mechanical departments during opportunistic shut down and Annual shut down

Perform Stores Procedures

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

PC5. Perform Stores procedures: Withdraw from and return material to the stores Inspect new material received at stores

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. Understands PM (Preventive Maintenance) norms as defined by the company

KU2. Understands Production targets and production loss figures for the month and contribution by Control Valve

KU3. Aware of Maintenance Policy of the company with respect to control valve maintenance strategy

KU4. Understands the processes and equipment information related to control loops which have Control Valve as their final control element

KU5. Understands site emergency procedures

KU6. Understands location and procedure for fire extinguishers, smoke detectors and personal protective equipment

Generic Skills (GS)

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

GS1. Use Formats and check list for Site management planning and reports

GS2. Write emails and messages about site management related issues

GS3. Company policy related to regulatory compliance

GS4. Formats for Preventive Maintenance check sheets, predictive maintenance list

GS5. Describe site and process conditions issues to co-workers and supervisor

GS6. Interact with inspectors and other visitors according to company policies

GS7. Make decisions according to the site situations during statutory audit and plant maintenance, in line with company policies and procedures

GS8. Plan for regulatory compliance

GS9. Plan for preventive and scheduled maintenance

GS10. Plan for opportunistic maintenance

GS11. Discuss customer needs with co-workers and identify most appropriate solution

GS12. Diagnoses reasons for down time due to control valve failure

GS13. Track recurring failures in Control Valve and analyses reasons and concludes

GS14. Identify immediate or temporary solutions to resolve delays and discuss with the Supervisor

GS15. Discuss use the available information with co-workers to arrive at actionable decision points

GS16. Analyze problems in team and identify causes and possible solutions

GS17. Collaborate with co-workers to analyze, and evaluate the information gathered from collective observation, experience, reasoning, or communication, as a guide to teamwork

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Support Statutory Audits	**15**	**5**	**-**	**-**
PC1. Support the plant authorities during inspection - such as IBR inspection formalities and stamping of IBR items including Control Valve and associated accessories which fall in the IBR area	15	5	-	-
Interact with Service contract vendors	**10**	**10**	**-**	**-**
PC2. Perform formalities of the site visit of the representative of the Service Contract vendor for Control Valve. Locate and identify the Control Valve and accessories to be covered by the vendor.	10	10	-	-
Prepare Inspection &Test Reports	**15**	**5**	**-**	**-**
PC3. Prepare the appropriate Inspection and Test reports	15	5	-	-
Support Shut Down procedures	**10**	**10**	**-**	**-**
PC4. Support formalities and coordination relating to Process and Mechanical departments during opportunistic shut down and Annual shut down	10	10	-	-
Perform Stores Procedures	**10**	**10**	**-**	**-**
PC5. Perform Stores procedures: Withdraw from and return material to the stores Inspect new material received at stores	10	10	-	-
NOS Total	**60**	**40**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	IAS/N0102
NOS Name	Site Management Process Control
Sector	Instrumentation
Sub-Sector	Instrumentation & Automation
Occupation	Maintenance
NSQF Level	4
Credits	1
Version	3.0
Last Reviewed Date	NA
Next Review Date	26/05/2025
NSQC Clearance Date	26/05/2022

IAS/N0101: Preventive & Predictive Maintenance Control Valve

Description

The OS unit is about performing Preventive Maintenance supported by Predictive Maintenance for Control Valve

Scope

The scope covers the following :

- This Unit Task covers the following : Obtaining Work Permit PM Schedule Execute Preparing Process List Planning PM Schedule Visual checks and action Completion of preventive maintenance schedule Preparing PRM List Listing PM Jobs to be taken during Shut down Following up PM List

Elements and Performance Criteria

Obtain Work permit

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

PC1. Obtain work permit (mandatory) from the Process Supervisor before commencing maintenance work

Execute PM Schedule

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

PC2. Carry out Preventive maintenance jobs as per available Preventive Maintenance Schedule

Prepare Process List

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

PC3. Prepare list on basis of process request

Plan PM Schedule

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

PC4. Plan for next day preventive maintenance schedule

Perform Visual Checks and corrective actions

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

PC5. Carry out-Visual Checks and action wherever possible or else transfer job to shut down list. Check for abnormal vibration locate source- correct and/or inform the supervisor Check abnormal noise and locate source. If it is cavitation or flashing induced noise inform supervisor and Process supervisor Check for gland leak and arrest. If not possible, inform supervisor and transfer to shut down list Check for Instrument air leaks arrest leak, if not possible inform supervisor and transfer to shut down list Check for control valve bonnet and body flange leaks inform Process supervisor and Instrument supervisor Check for poor electric integrity like exposed terminal and open enclosure- rectify, .If not permitted inform supervisor and transfer toshut down list Check pneumatic and electric connections to solenoid valve Check for integrity of valve positioner feedback link / connection and rectify fault after informing Process supervisor Check for environment impact, water ingress and corrosion. Rectify fault or if not possible, transfer to shut down list Check for loose bolting and rattling in control valve and accessories including manual operator- rectify fault

Complete PM Schedule

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

PC6. Complete preventive maintenance schedule list of control valve body, actuator and accessories. Close the issues in the list.

Prepare PRM-List

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

PC7. Collect and consolidate daily diagnostic messages from Control Valve which have a digital valve controller and record the same in either Preventive Maintenance list or Opportunistic shut down list for execution

List PM Jobs to be taken during Shut down

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

PC8. Include in the list preventive maintenance jobs to be taken during annual shut down or opportunistic shut down

Follow up PM list

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

PC9. Follow up on consolidated preventive maintenance list and close.

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. Understands PM (Preventive Maintenance) norms as defined by the company

KU2. Understands Production targets and production loss figures for the month and contribution by Control Valve

KU3. Aware of Maintenance Policy of the company with respect to control valve maintenance strategy

KU4. Trouble Shooting on: Control valve body including valve movement and glands. Actuator section and valve positioners and diagnostic messages from Digital Valve controller Control valve accessories Solenoid valve and Limit switches

KU5. Familiar with hazardous area zone classification and process media hazards

KU6. Uses Control Valve Manual when required

KU7. Familiar with PST, a feature of DCS

Generic Skills (GS)

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

GS1. Use Formats and check list for Control Valve Health planning and reports

GS2. Write emails and messages about site related issues

GS3. Company policy related to Preventive Maintenance

GS4. Monthly down time and resulting production loss

GS5. Use of Work Permit system

GS6. Formats for Preventive Maintenance check sheets, predictive maintenance list

GS7. Describe condition of Control Valve and accessories and issues to co-workers and supervisor

GS8. Communicate to the management in meetings about maintenance issues which need management attention

GS9. Interact with coworkers and gather information related to process and control valve conditions

GS10. Make decisions about timing and extent of preventive maintenance, in consultation with the Supervisor

GS11. Prioritize daily tasks to conduct Preventive Maintenance effectively

GS12. Understand real needs of the customer and suggest most appropriate solution

GS13. support customer when they need help

GS14. Diagnoses reasons for down time due to control valve failure

GS15. Track recurring failures in Control Valve and analyses reasons and concludes

GS16. Identify immediate or temporary solutions to resolve delays and discuss with the Supervisor

GS17. Use the existing information to arrive at actionable decision points

GS18. Use the existing information for improving the customer satisfaction

GS19. Use the existing information to optimize solution and company business

GS20. Analyze problems and identify causes and possible solutions

GS21. Apply, analyze, and evaluate the information gathered from observation, experience, reasoning, or communication, as a guide to thought and action

GS22. Anticipate problems, risks and opportunities and utilize these for mitigation and business optimization

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Obtain Work permit	**5**	**5**	**-**	**-**
PC1. Obtain work permit (mandatory) from the Process Supervisor before commencing maintenance work	5	5	-	-
Execute PM Schedule	**10**	**30**	**-**	**-**
PC2. Carry out Preventive maintenance jobs as per available Preventive Maintenance Schedule	10	30	-	-
Prepare Process List	**10**	**10**	**-**	**-**
PC3. Prepare list on basis of process request	10	10	-	-
Plan PM Schedule	**10**	**10**	**-**	**-**
PC4. Plan for next day preventive maintenance schedule	10	10	-	-
Perform Visual Checks and corrective actions	**10**	**20**	**-**	**-**

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC5. Carry out-Visual Checks and action wherever possible or else transfer job to shut down list. Check for abnormal vibration locate source- correct and/or inform the supervisor Check abnormal noise and locate source. If it is cavitation or flashing induced noise inform supervisor and Process supervisor Check for gland leak and arrest. If not possible, inform supervisor and transfer to shut down list Check for Instrument air leaks arrest leak, if not possible inform supervisor and transfer to shut down list Check for control valve bonnet and body flange leaks inform Process supervisor and Instrument supervisor Check for poor electric integrity like exposed terminal and open enclosure- rectify, .If not permitted inform supervisor and transfer toshut down list Check pneumatic and electric connections to solenoid valve Check for integrity of valve positioner feedback link / connection and rectify fault after informing Process supervisor Check for environment impact, water ingress and corrosion. Rectify fault or if not possible, transfer to shut down list Check for loose bolting and rattling in control valve and accessories including manual operator- rectify fault	10	20	-	-
Complete PM Schedule	**5**	**15**	**-**	**-**
PC6. Complete preventive maintenance schedule list of control valve body, actuator and accessories. Close the issues in the list.	5	15	-	-
Prepare PRM-List	**7**	**8**	**-**	**-**
PC7. Collect and consolidate daily diagnostic messages from Control Valve which have a digital valve controller and record the same in either Preventive Maintenance list or Opportunistic shut down list for execution	7	8	-	-
List PM Jobs to be taken during Shut down	**10**	**15**	**-**	**-**
PC8. Include in the list preventive maintenance jobs to be taken during annual shut down or opportunistic shut down	10	15	-	-
Follow up PM list	**5**	**15**	**-**	**-**

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC9. Follow up on consolidated preventive maintenance list and close.	5	15	-	-
NOS Total	**72**	**128**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	IAS/N0101
NOS Name	Preventive & Predictive Maintenance Control Valve
Sector	Instrumentation
Sub-Sector	Instrumentation & Automation
Occupation	Maintenance
NSQF Level	4
Credits	1
Version	3.0
Last Reviewed Date	NA
Next Review Date	26/05/2025
NSQC Clearance Date	26/05/2022

IAS/N0100: Maintain Control Valve Health

Description

The OS unit is about maintaining Control Valve health in a Process Control where instrumentation and control valve related activities take place.

Scope

The scope covers the following :

- The scope of this task includes performing: Integrity checks Visual Checks Control Valve Installations - Visual Checks Housekeeping in Control Valve testing bay Electrical safety norms Consumables storage and consumption Status of control valve name plate Work Area audit Entries and closing of Check Lists

Elements and Performance Criteria

Perform Integrity checks

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

PC1. Perform Control Valve Health Checks as prescribed byOrganizational norms in the following areas: Control valve installations and their accessories Control Valve testing bay in the Instrumentation workshop, test equipment and test pumps

Perform Visual Checks

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

PC2. Perform following checks and report to supervisor: Check for visual damage or tampering on actuator Check for visible damage or tampering on valve positioner Check for misuse of control valve installation by other agencies for example, for climbing or using as support for their work Check for building roof leakage/seepage which result in water splash and ingress

Perform Control Valve Installations Visual Checks

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

PC3. Check housekeeping near control valve installations Check for oil/water spillage Check for cluttering around the control valve which hampers free access to the valve

Perform Housekeeping in Control Valve testing bay

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

PC4. Check housekeeping in Control Valve testing bay in Instrumentation Workshop Check for Oil / water spillage on testing floor Check for clear working space and safe parking of overhead crane

Follow Electrical safety norms

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

PC5. Check for lighting / associated electricals near control valve installation Ensure lights near Control valve installations operate Check for temporary/unsafe electrical wiring report to Electrical department

Monitor Consumables storage and consumption

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

PC6. Ensure optimum storage of cleaning solvent, lubrication items and related maintenance consumables at designated space. Ensure that these are used optimally (avoid wastage and spillage)

Check Status of control valve name plate

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

PC7. Check name plate of the manufacturer on the valve and clean with solvent, as required. Inform supervisor if damaged or missing.

Undertake Work Area audit

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

PC8. Undertake work area audit with supervisor for Control Valve Installations and Control Valve testing bay areas as per work area audit check sheet

Complete Entries and closing of Check Lists

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

PC9. Complete entries of Check Lists for Control Valve Health issued by the company Complete check list entries for Control Valve Health for control valve installations and control valve testing bay Transfer entries as applicable to Preventive Maintenance list or Opportunistic Shut down List Follow up Check Lists for Control Valve Health and close

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. Understands how Control Valve impact the process operations. Understands how control valve malfunction will affect a particular control loop. Understands relation of maintenance time to production loss in process operations.

KU2. Understands how site conditions impact control valve operations.

KU3. Type of chemicals and other process material used in the organization and how these impact the site conditions

KU4. How Control Valve maintenance is performed in the organization.

KU5. Hazardous chemicals and their handling procedures.

Generic Skills (GS)

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

GS1. Use Formats and check list for Control Valve Health

GS2. Write emails and messages about Control Valve related issues

GS3. Read product literature and manuals relevant for the job

GS4. Read the company information about working practices at the Control Valve

GS5. Read the information displayed at the workplace

GS6. Describe Control Valve conditions and issues to co-workers and supervisor

GS7. Communicate to the management in meetings about Control Valve Health issues to get their support

GS8. Interact with coworkers and gather information related to process and Control Valve conditions

GS9. Make decisions pertaining to the concerned area of work

GS10. How to prioritize daily activities for the upkeep of process operation through ensuring availability of operation of Control Valve.

GS11. Understand real needs of the customer and suggest most appropriate solution

GS12. support customer when they need help

GS13. Think through the problem, evaluate the possible solution(s) and suggest an optimum /best possible solution(s)

GS14. Identify immediate or temporary solutions to resolve delays

GS15. Use the existing information to arrive at actionable decision points

GS16. Use the existing information for improving the customer satisfaction

GS17. Use the existing information to optimize solution and company business

GS18. Analyze problems and identify causes and possible solutions

GS19. Apply, analyze, and evaluate the information gathered from observation, experience, reasoning, or communication, as a guide to thought and action

GS20. Anticipate problems, risks and opportunities and utilize these for mitigation and business optimization

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Perform Integrity checks	**8**	**12**	**-**	**-**
PC1. Perform Control Valve Health Checks as prescribed byOrganizational norms in the following areas: Control valve installations and their accessories Control Valve testing bay in the Instrumentation workshop, test equipment and test pumps	8	12	-	-
Perform Visual Checks	**4**	**6**	**-**	**-**
PC2. Perform following checks and report to supervisor: Check for visual damage or tampering on actuator Check for visible damage or tampering on valve positioner Check for misuse of control valve installation by other agencies for example, for climbing or using as support for their work Check for building roof leakage/seepage which result in water splash and ingress	4	6	-	-
Perform Control Valve Installations Visual Checks	**2**	**8**	**-**	**-**
PC3. Check housekeeping near control valve installations Check for oil/water spillage Check for cluttering around the control valve which hampers free access to the valve	2	8	-	-
Perform Housekeeping in Control Valve testing bay	**2**	**8**	**-**	**-**
PC4. Check housekeeping in Control Valve testing bay in Instrumentation Workshop Check for Oil / water spillage on testing floor Check for clear working space and safe parking of overhead crane	2	8	-	-
Follow Electrical safety norms	**4**	**6**	**-**	**-**
PC5. Check for lighting / associated electricals near control valve installation Ensure lights near Control valve installations operate Check for temporary/unsafe electrical wiring report to Electrical department	4	6	-	-
Monitor Consumables storage and consumption	**3**	**7**	**-**	**-**

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC6. Ensure optimum storage of cleaning solvent, lubrication items and related maintenance consumables at designated space. Ensure that these are used optimally (avoid wastage and spillage)	3	7	-	-
Check Status of control valve name plate	**5**	**5**	**-**	**-**
PC7. Check name plate of the manufacturer on the valve and clean with solvent, as required. Inform supervisor if damaged or missing.	5	5	-	-
Undertake Work Area audit	**4**	**6**	**-**	**-**
PC8. Undertake work area audit with supervisor for Control Valve Installations and Control Valve testing bay areas as per work area audit check sheet	4	6	-	-
Complete Entries and closing of Check Lists	**5**	**5**	**-**	**-**
PC9. Complete entries of Check Lists for Control Valve Health issued by the company Complete check list entries for Control Valve Health for control valve installations and control valve testing bay Transfer entries as applicable to Preventive Maintenance list or Opportunistic Shut down List Follow up Check Lists for Control Valve Health and close	5	5	-	-
NOS Total	**37**	**63**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	IAS/N0100
NOS Name	Maintain Control Valve Health
Sector	Instrumentation
Sub-Sector	Instrumentation & Automation
Occupation	Maintenance
NSQF Level	4
Credits	1
Version	3.0
Last Reviewed Date	NA
Next Review Date	26/05/2025
NSQC Clearance Date	26/05/2022

IAS/N0103: Task Reporting - Process Control

Description

The OS unit is about reporting and record keeping as per company processes and job description for Instrumentation Technicians

Scope

The scope covers the following :

- This Unit Task covers the following:
- Reporting- faults
- Reporting PM
- Reporting Corrective Maintenance
- Reporting unusual occurrence
- Reporting Theft
- Reporting security breach

Elements and Performance Criteria

Report faults

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

PC1. Report and Escalate faults/issues to immediate supervisor

Prepare PM Report

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

PC2. Complete entry of preventive maintenance check lists/reports

Prepare Corrective Maintenance report

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

PC3. Complete entry of Corrective Maintenance Check lists /reports

Report unusual occurrence

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

PC4. Complete report on noticing any visible changes in control valve installation or its accessories. Report for immediate attention of supervisor

Report theft

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

PC5. Report any theft in control valve assembly/spares to supervisor

Report security breach

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

PC6. Report suspicious movement of new persons near control valve installation to security and supervisor

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. Understand basic company policy and maintenance strategy as applied to Control Valve

KU2. Understand importance of reporting potential failures during Control Valve Health visits / Preventive Maintenance checks/Observation to supervisor

KU3. Provide accurate time for jobs undertaken especially during opportunistic/annual shut down to supervisor

KU4. Provide status on critical spares consumption so that supervisor can take proactive steps

KU5. Prepare daily log and failure reports

KU6. Furnish basic data to supervisor related to specification of control valve

KU7. Send internal mails related to PM or Corrective maintenance to supervisor

KU8. Record Maintenance history

Generic Skills (GS)

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

GS1. Write mails about work

GS2. Write reports and logs in company prescribed formats

GS3. Make notes about the observations in the plant and share with the supervisor and co-workers as appropriate

GS4. Write to management about feedback and unresolved issues

GS5. Read and comprehend formats and check lists for preventive and corrective maintenance.

GS6. Read and understand company policies

GS7. Communicate the issues / faults / corrective actions / warnings / suggestions with complete details to the supervisor and co-workers as appropriate

GS8. Make decisions on a suitable course of action or response keeping in view resource utilization while meeting commitments

GS9. How to prioritize jobs during multiple breakdown situation

GS10. Plan and organize work to achieve targets and deadlines

GS11. Discuss customer needs with co-workers and identify most appropriate solution

GS12. Can diagnose control valve faults and communicate effectively to Process and Instrumentation supervisor.

GS13. Use the existing information to arrive at actionable decision points

GS14. Use the existing information for improving the customer satisfaction

GS15. Use the existing information to optimize solution and company business

GS16. Analyze problems and identify causes and possible solutions

GS17. Apply, analyze, and evaluate the information gathered from observation, experience, reasoning, or communication, as a guide to thought and action

GS18. Anticipate problems, risks and opportunities and utilize these for mitigation and business optimization

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Report faults	**5**	**5**	**-**	**-**
PC1. Report and Escalate faults/issues to immediate supervisor	5	5	-	-
Prepare PM Report	**10**	**15**	**-**	**-**
PC2. Complete entry of preventive maintenance check lists/reports	10	15	-	-
Prepare Corrective Maintenance report	**10**	**15**	**-**	**-**
PC3. Complete entry of Corrective Maintenance Check lists /reports	10	15	-	-
Report unusual occurrence	**10**	**10**	**-**	**-**
PC4. Complete report on noticing any visible changes in control valve installation or its accessories. Report for immediate attention of supervisor	10	10	-	-
Report theft	**5**	**5**	**-**	**-**
PC5. Report any theft in control valve assembly/spares to supervisor	5	5	-	-
Report security breach	**5**	**5**	**-**	**-**
PC6. Report suspicious movement of new persons near control valve installation to security and supervisor	5	5	-	-
NOS Total	**45**	**55**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	IAS/N0103
NOS Name	Task Reporting - Process Control
Sector	Instrumentation
Sub-Sector	Instrumentation & Automation
Occupation	Maintenance
NSQF Level	4
Credits	1
Version	3.0
Last Reviewed Date	NA
Next Review Date	26/05/2025
NSQC Clearance Date	26/05/2022

IAS/N0104: Corrective Maintenance - Control Valve

Description

The OS unit is about performing Corrective Maintenance Activities associated with Control Valve in process plants.

Scope

The scope covers the following :

- This Unit Task covers the following in respect of Corrective Maintenance : Identify needs Identify Spares
- Follow Plan Execute Plan Brief Supervisor Complete Check List/ Report Close fault list

Elements and Performance Criteria

Identify CorrectiveMaintenance needs

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

PC1. Identify need for corrective maintenance in the plant

Identify CorrectiveMaintenance Spares

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

PC2. Identify spares required for corrective maintenance and prepare list

Follow CorrectiveMaintenance plan

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

PC3. Adhere to corrective maintenance plan

Execute CorrectiveMaintenance plan

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

PC4. Carry out Corrective maintenance for items listed. This includes: Valve disassembly; seat, stem, gland replacement; bonnet gaskets actuator stem connection along with spring actuator servicing Reassembly, Hydro test and Leak test Diaphragm replacement, tests on positioner, booster, current to pneumatic convertor, tubing, , valve stroking, leak checks and final line up on the plantNote that in Industries where PRV(Pressure Relief Valve) come under Instrumentation department and under the Control Valve section- PRV servicing and testing would apply

Brief Supervisor onCorrective Maintenance

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

PC5. Brief Supervisor and Escalate Faults / issues if any

Complete Corrective Maintenance Check List / Report

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

PC6. Complete entry of corrective maintenance check lists / reports

Close CorrectiveMaintenance fault list

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

PC7. Close all faults reported

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. Understands Preventive Maintenance norms of the company to perform Opportunistic preventive maintenance

KU2. Understands Corrective maintenance norms as per company to avoid delays / production loss

KU3. Establishes contact with Central Planning to prioritize and calibrate timing for corrective maintenance work during Opportunistic shut downs / Annual Shut down

KU4. Possesses functional knowledge of all types of Control Valve in the process plant including all accessories (including conventional pneumatic valve positioners, position transmitters, limit switches, Digital valve controllers etc.)This includes Globe type(conventional) ,Globe(Cage type) Butterfly , Rotary plug Control Valve(also called eccentric disc control valve), all Trip valves(i.e. Emergency Shutdown Valves including Solenoid valves , Possesses functional knowledge of all control valve actuators including Pneumatic diaphragm type, piston type , .Electric and Hydraulic actuators Possesses knowledge of all valve characteristics such as Quick opening, Linear, Equal Percentage modified characteristics of Butterfly valves and rotary plug valves[eccentric disc valves)

KU5. Familiar with Standard operating Procedure for Control Valve as published by the organization

KU6. Familiar with procedures of permits to work issued by Process personnel for maintenance work.

KU7. Uses all relevant control valve vendor manuals and associated Parts list

KU8. Familiar with use of instrumentation test equipment including all Calibrators used for Control valve testing

KU9. Familiar with use of test pumps for control valve body test and leak test

KU10. Uses Spare Gear book / equivalent procedure for withdrawal and return of items to stores

KU11. Understands Test and Inspection reports

KU12. Understands P & I diagrams, Loop and Hook up diagrams.

KU13. Understands General Arrangement Drawing and Piping Isometric drawing with control valve

KU14. Has a working knowledge of Standards for Control Valve.

KU15. Familiar with Hazardous Area Classification and relation to the control valve installations

KU16. Knows to interpret the control valve name plate specification as well as the control valve data sheet

KU17. Understands control valve coefficient Cv and simple sizing formula

KU18. Possesses working knowledge of Material of construction of control valve bodies and internal parts and compatibility with process media

Generic Skills (GS)

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

GS1. Use Formats and check list for Corrective Maintenance planning and reports

GS2. Write emails and messages about site related issues

GS3. Control valve related drawings and documents
GS4. Company policy related to Preventive Maintenance
GS5. Monthly down time and resulting production loss figures
GS6. Work Permit system
GS7. Formats for Corrective Maintenance check sheets, list
GS8. Describe condition of Control Valve and accessories and issues to co- workers and supervisor
GS9. Communicate to the management in meetings about maintenance issues which need management attention
GS10. Interact with coworkers and gather information related to process and control valve conditions
GS11. Make decisions about timing and extent of corrective maintenance, in consultation with the Supervisor
GS12. Uses diagnosis methods to arrive at corrective maintenance method with back ground of process information
GS13. Follows procedure for subassembly/spare replacement
GS14. Prioritize daily tasks to conduct Preventive Maintenance effectively
GS15. Discuss customer needs with co-workers and identify most appropriate solution
GS16. Uses root cause approach to analyze recurrent failures
GS17. Diagnoses reasons for down time due to control valve failure
GS18. Track recurring failures in Control Valve and analyses reasons and concludes
GS19. Identify immediate or temporary solutions to resolve delays and discuss with the Supervisor
GS20. Discuss use the available information with co-workers to arrive at actionable decision points
GS21. Analyze problems in team and identify causes and possible solutions
GS22. Collaborate with co-workers to analyze, and evaluate the information gathered from collective observation, experience, reasoning, or communication, as a guide to teamwork

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Identify CorrectiveMaintenance needs	**15**	**15**	**-**	**-**
PC1. Identify need for corrective maintenance in the plant	15	15	-	-
Identify CorrectiveMaintenance Spares	**15**	**15**	**-**	**-**
PC2. Identify spares required for corrective maintenance and prepare list	15	15	-	-
Follow CorrectiveMaintenance plan	**10**	**20**	**-**	**-**
PC3. Adhere to corrective maintenance plan	10	20	-	-
Execute CorrectiveMaintenance plan	**10**	**20**	**-**	**-**
PC4. Carry out Corrective maintenance for items listed. This includes: Valve disassembly; seat, stem, gland replacement; bonnet gaskets actuator stem connection along with spring actuator servicing Reassembly, Hydro test and Leak test Diaphragm replacement, tests on positioner, booster, current to pneumatic convertor, tubing, , valve stroking, leak checks and final line up on the plantNote that in Industries where PRV(Pressure Relief Valve) come under Instrumentation department and under the Control Valve section- PRV servicing and testing would apply	10	20	-	-
Brief Supervisor onCorrective Maintenance	**10**	**10**	**-**	**-**
PC5. Brief Supervisor and Escalate Faults / issues if any	10	10	-	-
Complete Corrective Maintenance Check List / Report	**10**	**20**	**-**	**-**
PC6. Complete entry of corrective maintenance check lists / reports	10	20	-	-
Close CorrectiveMaintenance fault list	**10**	**20**	**-**	**-**
PC7. Close all faults reported	10	20	-	-
NOS Total	**80**	**120**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	IAS/N0104
NOS Name	Corrective Maintenance - Control Valve
Sector	Instrumentation
Sub-Sector	Instrumentation & Automation
Occupation	Maintenance
NSQF Level	4
Credits	1
Version	3.0
Last Reviewed Date	NA
Next Review Date	26/05/2025
NSQC Clearance Date	26/05/2022

IAS/N0105: Safety, Health and Environment Process Control

Description

The OS unit is about adhering to Safety, Health and Environment (SHE) norms in Process Plants.

Scope

The scope covers the following :

- The scope of this task includes following / performing: SHE Instructions SHE Personal Protection Directives Support SHE Audit

Elements and Performance Criteria

Follow SHE-Instructions

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

PC1. Interpret and follow formal Instructions from SHE Dept.

PC2. Participate in the prescribed drills including familiarization of personal protective equipment, fire extinguisher and first aid.

PC3. Follow Instructions on Work permit, Fire permit and Hazardous Area Classification, Fire and explosion hazards

Follow SHE for Personal Protection

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

PC4. Use right personal protective equipment, such as: Use safety shoes and helmet at all times in plant Use ear muffs in prescribed high decibel areas Adapt right posture during lifting of heavy objects. Use correct gas mask/breathing air apparatus as per area and directives Use safety goggles and gloves as per directives

Support SHE - Audit

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

PC5. Support supervisor during SHE Audit Check for leaks Check for unsafe scaffolding and temporary installations Check for correct storage of cleaning solvents and consumable such as waste cloth Ensure safe working in crane movement area. Check housekeeping including oil and water spillages on floor Check for improper bolting or open enclosures / junction boxes

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. Understands SHE Instruction Understands Safety, Health and Environment directives Understands emergency procedures during site emergencies Understands Hazards in process as well as process media associated with these hazards

KU2. Demonstrates familiarity and understanding of documents related to SHE Understands SHE emergency procedures for the site. Understands Hazardous Area Classifications and Zones 0,1,2 Understands procedures of permits to work issued by Process personnel for maintenance work.

Generic Skills (GS)

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

GS1. Use Formats and check list for SHE
GS2. Write emails and messages about SHE related issues
GS3. Companys SHE policy.
GS4. Use of Formats and check list for SHE audits
GS5. Understands SHE Directives and SOPs related to maintenance work
GS6. Product literature and manuals relevant for the job
GS7. Company information about working practices at the site
GS8. Information displayed at the workplace
GS9. Describe site conditions and issues to co-workers and supervisor
GS10. Communicate to the management in meetings about Control Valve Health issues to get their support
GS11. Interact with coworkers and gather information related to process and site conditions
GS12. Make decisions pertaining to SHE in the concerned area of work
GS13. Ensures his personal protective equipment and arrangement of tools conform to safe working norms before he commences his /her daily tasks
GS14. Follows SOP/Vendor manual safety instructions with respect to dismantling, assembly and gland repair work on Control Valve
GS15. Discuss customer needs with co-workers and identify most appropriate solution
GS16. Think through the problem, evaluate the possible solution(s) and suggest an optimum /best possible solution(s)
GS17. Identify immediate or temporary solutions to resolve delays
GS18. Discuss use the available information with co-workers to arrive at actionable decision points
GS19. Analyze problems in team and identify causes and possible solutions
GS20. Collaborate with co-workers to analyze, and evaluate the information gathered from collective observation, experience, reasoning, or communication, as a guide to teamwork

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Follow SHE-Instructions	**15**	**15**	**-**	**-**
PC1. Interpret and follow formal Instructions from SHE Dept.	5	5	-	-
PC2. Participate in the prescribed drills including familiarization of personal protective equipment, fire extinguisher and first aid.	5	5	-	-
PC3. Follow Instructions on Work permit, Fire permit and Hazardous Area Classification, Fire and explosion hazards	5	5	-	-
Follow SHE for Personal Protection	**5**	**5**	**-**	**-**
PC4. Use right personal protective equipment, such as: Use safety shoes and helmet at all times in plant Use ear muffs in prescribed high decibel areas Adapt right posture during lifting of heavy objects. Use correct gas mask/breathing air apparatus as per area and directives Use safety goggles and gloves as per directives	5	5	-	-
Support SHE - Audit	**5**	**5**	**-**	**-**
PC5. Support supervisor during SHE Audit Check for leaks Check for unsafe scaffolding and temporary installations Check for correct storage of cleaning solvents and consumable such as waste cloth Ensure safe working in crane movement area. Check housekeeping including oil and water spillages on floor Check for improper bolting or open enclosures / junction boxes	5	5	-	-
NOS Total	**25**	**25**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	IAS/N0105
NOS Name	Safety, Health and Environment Process Control
Sector	Instrumentation
Sub-Sector	Instrumentation & Automation
Occupation	Maintenance
NSQF Level	3
Credits	2
Version	3.0
Last Reviewed Date	NA
Next Review Date	26/05/2025
NSQC Clearance Date	26/05/2022

IAS/N9001: Work effectively with teams

Description

This NOS 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 :

- Work as per organisational team environment
- Communicate effectively
- Co-operate with team members and superiors
- Respect customes / preferences and gender / ability differences "

Elements and Performance Criteria

Work as per the organisational team environment

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

PC1. identify team objectives and goals, team members by name, their role and responsibilities, greet them appropriately and respond to their greetings

PC2. comply with organisation’s policies and procedures for working with team members within and outside the organisation—especially related to privacy, confidentiality and security

PC3. work as per the environment to build trust and mutual respect

PC4. participate in decision making by providing facts and figures, give / accept constructive suggestions, take initiatives to help team members arrive at workable decisions and meet the goals

PC5. accept decisions professionally and support even if they do not match suggestions and personal views

Communicate effectively

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

PC6. communicate professionally as per organisation's protocols, using appropriate mode of communication—verbal, written, mail, phone or text—and clearly articulate the message to ensure that the receiver understands the message

PC7. listen to team members attentively, respond promptly, seek / provide clarifications if required

PC8. share important information with the team timely and refrain from overloading them with unnecessary and unsolicited information

Co-operate with team members and superiors

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

PC9. perform own role, receive inputs from others and make adjustments within permissible rules as per requirement, to produce output in time for other team members to follow

PC10. help team members to perform their role effectively and provide any clarifications/support they need, including tools /equipment / common resources as well as resolve any contentious issues amicably, involving the team lead or the supervisor if needed

PC11. let team members know in good time if commitments cannot be carried out, explaining the reasons, and provide alternate solutions, if any; let the team lead know about this

PC12. act in the interest of the team and the organisation, take initiative to correct the wrong, seek help or escalate if needed to ensure that things do not 'fall through the gap' and team goals are achieved

Respect customs / preferences and gender / ability differences

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

PC13. follow organisation's policies and statutory guidelines w.r.t seeking information about others' customs / preferences, making references or comments on social customs / preferences, and refrain from hurting sentiments

PC14. accommodate team members' preferences to the extent feasible, and in case they come in the way of fulfilling team goals, discuss with the supervisor/ team leader

PC15. ensure personal behaviour, conduct and communication styles, taking gender and disability of the person into consideration

PC16. list the different types of disabilities with their respective issues and ways to help them overcome challenges

PC17. use inclusive language, verbal as well as non-verbal, irrespective of the disability and the gender of the person

PC18. ensure equal treatment for all clients, colleagues and co-workers while respecting their personal space

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. Organisation's policies on dress code , workplace behaviour , performance management,incentives,delivery standards,information security,etc.

KU2. Organisation's hierarchy and escalation matrix

KU3. importance of the individual's role in the workflow

KU4. work area inspection procedures and practices

KU5. different types of information that colleagues might need and the importance of providing this information when it is required

KU6. deeper understanding of actions and consequences of gender based behaviour

KU7. knowledge of gender based concepts, issues and legislation

KU8. organisation standards and guidelines to be followed for PwD and knowledge about laws, acts and provisions defined for PwD by the statutory bodies and the right way to use them including various medical conditions associated with PwD

KU9. health and safety requirements at workplace for PwD and information about various institutes working for PwD to enable in providing livelihood opportunities for PwD

KU10. rights and duties at workplace with respect to PwD and various government / private schemes and benefits available for PwD

KU11. process of recruiting people for a particular job profile w.r.t PwD and gender including rights and duties at workplace with respect to gender sensitivity

Generic Skills (GS)

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

GS1. complete forms such as work orders, invoices and maintenance records

GS2. fill up appropriate forms,activity logs and attendance sheets as per the organisation's format in English and/or local language

GS3. write basic accident or incident report as witnessed in an appropriate format to the relevant authority

GS4. read warnings, instructions and other text material on product labels, components, etc.

GS5. read relevant signage, warnings, labels or descriptions on equipment, etc. while carrying out work activities

GS6. listen effectively and orally communicate information

GS7. ask for clarification and advice from the concerned person

GS8. make decisions on a suitable course of action or response keeping in view resource utilisation while meeting

GS9. plan and organise work to achieve targets and deadlines

GS10. understand needs of the customer, suggest most appropriate solution and support them whenever needed

GS11. match symptoms of the fault noticed to the cause of the problem

GS12. anticipate and avoid hazards that may occur during repairs because of tools, materials used or repair processes

GS13. spot process disruptions and delays

GS14. practice and acceptance of gender and its concepts

GS15. develop empathy across genders and towards PwD

GS16. reflect on own gender identity, gender roles and PwD issues

GS17. engage and participate in discussions to end gender and disability discrimination

GS18. improve and modify work practices

GS19. maintain positive and effective relationships with colleagues and customers

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Work as per the organisational team environment	**15**	**8**	**-**	**5**
PC1. identify team objectives and goals, team members by name, their role and responsibilities, greet them appropriately and respond to their greetings	4	4	-	-
PC2. comply with organisation's policies and procedures for working with team members within and outside the organisation—especially related to privacy, confidentiality and security	4	-	-	2
PC3. work as per the environment to build trust and mutual respect	2	-	-	1
PC4. participate in decision making by providing facts and figures, give / accept constructive suggestions, take initiatives to help team members arrive at workable decisions and meet the goals	4	4	-	1
PC5. accept decisions professionally and support even if they do not match suggestions and personal views	1	-	-	1
Communicate effectively	**6**	**10**	**-**	**1**
PC6. communicate professionally as per organisation's protocols, using appropriate mode of communication—verbal, written, mail, phone or text—and clearly articulate the message to ensure that the receiver understands the message	2	6	-	1
PC7. listen to team members attentively, respond promptly, seek / provide clarifications if required	2	-	-	-
PC8. share important information with the team timely and refrain from overloading them with unnecessary and unsolicited information	2	4	-	-
Co-operate with team members and superiors	**8**	**18**	**-**	**1**
PC9. perform own role, receive inputs from others and make adjustments within permissible rules as per requirement, to produce output in time for other team members to follow	2	6	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC10. help team members to perform their role effectively and provide any clarifications/support they need, including tools /equipment / common resources as well as resolve any contentious issues amicably, involving the team lead or the supervisor if needed	-	6	-	1
PC11. let team members know in good time if commitments cannot be carried out, explaining the reasons, and provide alternate solutions, if any; let the team lead know about this	2	-	-	-
PC12. act in the interest of the team and the organisation, take initiative to correct the wrong, seek help or escalate if needed to ensure that things do not 'fall through the gap' and team goals are achieved	4	6	-	-
Respect customs / preferences and gender / ability differences	**11**	**14**	**-**	**3**
PC13. follow organisation's policies and statutory guidelines w.r.t seeking information about others' customs / preferences, making references or comments on social customs / preferences, and refrain from hurting sentiments	2	4	-	-
PC14. accommodate team members' preferences to the extent feasible, and in case they come in the way of fulfilling team goals, discuss with the supervisor/ team leader	2	-	-	1
PC15. ensure personal behaviour, conduct and communication styles, taking gender and disability of the person into consideration	2	6	-	1
PC16. list the different types of disabilities with their respective issues and ways to help them overcome challenges	1	-	-	1
PC17. use inclusive language, verbal as well as non-verbal, irrespective of the disability and the gender of the person	2	4	-	-
PC18. ensure equal treatment for all clients, colleagues and co-workers while respecting their personal space	2	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
NOS Total	**40**	**50**	**-**	**10**

National Occupational Standards (NOS) Parameters

NOS Code	IAS/N9001
NOS Name	Work effectively with teams
Sector	Instrumentation
Sub-Sector	Instrumentation & Automation
Occupation	Generic
NSQF Level	4
Credits	1
Version	4.0
Last Reviewed Date	NA
Next Review Date	26/05/2025
NSQC Clearance Date	26/05/2022

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:

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.

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

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

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Introduction to Employability Skills	**1**	**1**	**-**	**-**
PC1. identify employability skills required for jobs in various industries	-	-	-	-
PC2. identify and explore learning and employability portals	-	-	-	-
Constitutional values – Citizenship	**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	-	-	-	-
Becoming a Professional in the 21st Century	**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	-	-	-	-
Basic English Skills	**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	-	-	-	-
Career Development & Goal Setting	**1**	**2**	**-**	**-**

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	-	-	-	-
Communication Skills	**2**	**2**	**-**	**-**
PC12. follow verbal and non-verbal communication etiquette and active listening techniques in various settings	-	-	-	-
PC13. work collaboratively with others in a team	-	-	-	-
Diversity & Inclusion	**1**	**2**	**-**	**-**
PC14. communicate and behave appropriately with all genders and PwD	-	-	-	-
PC15. escalate any issues related to sexual harassment at workplace according to POSH Act	-	-	-	-
Financial and Legal Literacy	**2**	**3**	**-**	**-**
PC16. select financial institutions, products and services as per requirement	-	-	-	-
PC17. carry out offline and online financial transactions, safely and securely	-	-	-	-
PC18. identify common components of salary and compute income, expenses, taxes, investments etc	-	-	-	-
PC19. identify relevant rights and laws and use legal aids to fight against legal exploitation	-	-	-	-
Essential Digital Skills	**3**	**4**	**-**	**-**
PC20. operate digital devices and carry out basic internet operations securely and safely	-	-	-	-
PC21. use e- mail and social media platforms and virtual collaboration tools to work effectively	-	-	-	-
PC22. use basic features of word processor, spreadsheets, and presentations	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Entrepreneurship	**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	-	-	-	-
Customer Service	**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	-	-	-	-
Getting ready for apprenticeship & Jobs	**2**	**3**	**-**	**-**
PC29. create a professional Curriculum vitae (Résumé)	-	-	-	-
PC30. search for suitable jobs using reliable offline and online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals, respectively	-	-	-	-
PC31. apply to identified job openings using offline /online methods as per requirement	-	-	-	-
PC32. answer questions politely, with clarity and confidence, during recruitment and selection	-	-	-	-
PC33. identify apprenticeship opportunities and register for it as per guidelines and requirements	-	-	-	-
NOS Total	**20**	**30**	**-**	**-**

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	31/08/2023
Next Review Date	31/08/2026
NSQC Clearance Date	31/08/2023

Assessment Guidelines and Assessment Weightage

Assessment Guidelines

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC.

2. The assessment for the theory part will be based on knowledge bank of questions created by the SSC.

3. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below).

4. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/ training center based on these criteria.

5. In case of successfully passing only certain number of NOSs, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack.

6. 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
IAS/N0102.Site Management Process Control	60	40	-	-	100	20
IAS/N0101.Preventive & Predictive Maintenance Control Valve	72	128	-	-	200	20
IAS/N0100.Maintain Control Valve Health	37	63	-	-	100	15
IAS/N0103.Task Reporting - Process Control	45	55	-	-	100	15
IAS/N0104.Corrective Maintenance - Control Valve	80	120	-	-	200	10
IAS/N0105.Safety, Health and Environment Process Control	25	25	-	-	50	5
IAS/N9001.Work effectively with teams	40	50	-	10	100	5
DGT/VSQ/N0102.Employability Skills (60 Hours)	20	30	0	0	50	10
Total	**379**	**511**	**0**	**0**	**900**	**100**

Acronyms

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

Glossary

Sector	Sector is a conglomeration of different business operations having similar business and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
Sub-sector	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
Occupation	Occupation is a set of job roles, which perform similar/ related set of functions in an industry.
Job role	Job role defines a unique set of functions that together form a unique employment opportunity in an organisation.
Occupational Standards (OS)	OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the Knowledge and Understanding (KU) they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria (PC)	Performance Criteria (PC) are statements that together specify the standard of performance required when carrying out a task.
National Occupational Standards (NOS)	NOS are occupational standards which apply uniquely in the Indian context.
Qualifications Pack (QP)	QP comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A QP is assigned a unique qualifications pack code.
Unit Code	Unit code is a unique identifier for an Occupational Standard, which is denoted by an 'N'
Unit Title	Unit title gives a clear overall statement about what the incumbent should be able to do.
Description	Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for.
Scope	Scope is a set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on quality of performance required.

Knowledge and Understanding (KU)	Knowledge and Understanding (KU) are statements which together specify the technical, generic, professional and organisational specific knowledge that an individual needs in order to perform to the required standard.
Organisational Context	Organisational context includes the way the organisation is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
Technical Knowledge	Technical knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
Core Skills/ Generic Skills (GS)	Core skills or Generic Skills (GS) are a group of skills that are the key to learning and working in today's world. These skills are typically needed in any work environment in today's world. These skills are typically needed in any work environment. In the context of the OS, these include communication related skills that are applicable to most job roles.
Electives	Electives are NOS/set of NOS that are identified by the sector as contributive to specialization in a job role. There may be multiple electives within a QP for each specialized job role. Trainees must select at least one elective for the successful completion of a QP with Electives.
Options	Options are NOS/set of NOS that are identified by the sector as additional skills. There may be multiple options within a QP. It is not mandatory to select any of the options to complete a QP with Options.