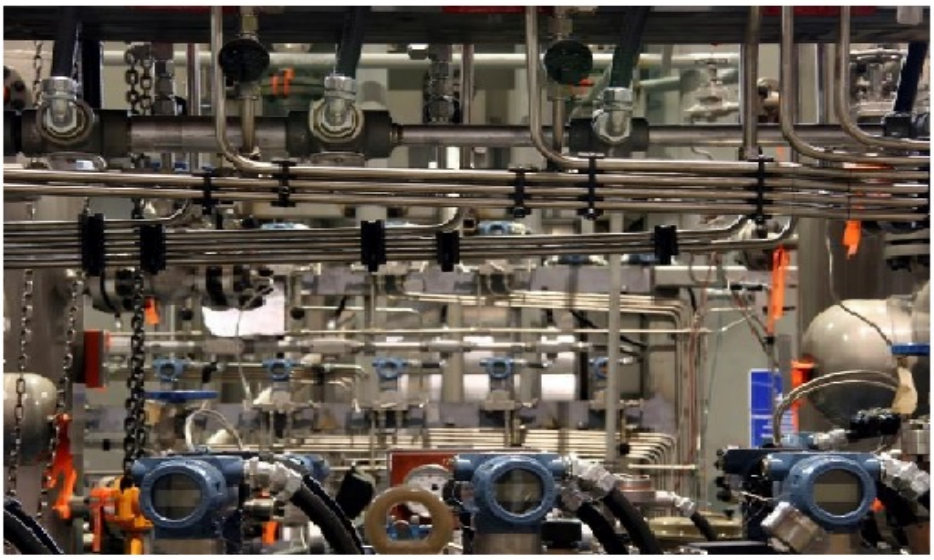
IASC SECTOR SKILL COUNCIL
एक कदम आत्मनिर्भरता की ओर

सत्यमेव जयते
GOVERNMENT OF INDIA
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Qualification Pack



Instrumentation Technician (Process Control)

QP Code: IAS/Q3102

Version: 2.0

NSQF Level: 4

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IAS/Q3102: Instrumentation Technician (Process Control)

Brief Job Description

The Instrumentation Technician (Process Control) carries out duties related to operation, preventive maintenance and breakdown maintenance of instrumentation and control systems in process plants

Personal Attributes

This job requires the individual to be disciplined, assertive, team player, possess analytical skills and problem solving ability, effective communicator and have the ability to work for long hours and under pressure.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. IAS/N3103: Maintain site readiness and instrument usability as applicable for process control industry
2. IAS/N3104: Perform process control preventive maintenance
3. IAS/N3106: Perform predictive, corrective and shutdown maintenance for process control
4. IAS/N3107: Perform installation of instruments and loop testing as per instructions
5. IAS/N3108: Perform process control reporting tasks
6. IAS/N9001: Work effectively with teams
7. IAS/N9002: Health and safety in workplace
8. DGT/VSQ/N0102: Employability Skills (60 Hours)

Qualification Pack (QP) Parameters

Sector	Instrumentation
Sub-Sector	Instrumentation & Automation
Occupation	System Operation and Maintenance
Country	India

Qualification Pack

NSQF Level	4
Credits	13
Aligned to NCO/ISCO/ISIC Code	NCO-2015/7311.0101
Minimum Educational Qualification & Experience	10th grade pass plus 1-year NTC/ NAC (in relevant field) OR 10th Class with 1 Year of experience in relevant field OR Completed 1st year of 3-year diploma (after 10th) and pursuing regular diploma (in relevant field) OR Previous relevant Qualification of NSQF Level (NSQF Level 3) with 1 Year of experience in relevant field
Minimum Level of Education for Training in School	
Pre-Requisite License or Training	Basic and Advance Training course on Instrumentation, PLC and Control Loops and Maintenance (Preferable)
Minimum Job Entry Age	18 Years
Last Reviewed On	NA
Next Review Date	22/08/2025
NSQC Approval Date	22/08/2020
Version	2.0
Reference code on NQR	2022/ETR/IASC/06501
NQR Version	2

IAS/N3103: Maintain site readiness and instrument usability as applicable for process control industry

Description

The OS unit is about maintaining general site readiness and instrument usability as applicable for process control industry

Scope

The scope covers the following :

- This unit/ task covers the following:
- Perform servicing and routine checks as instructed
- Identify and locate various equipment and devices
- Perform visual integrity checks of field installations
- Perform housekeeping and lighting related checks
- Monitor and maintain Consumables and perform follow-up

Elements and Performance Criteria

Follow plant working and instrumentation documents

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

PC1. read, interpret and follow the process plant related instructions and directives, including equipment required, location, lay out, procedures etc.

PC2. read, interpret and follow the the rules regarding various permits to work and use the right one depending on the job he/she undertakes.

PC3. make the check list consisting of site hygiene, calibration, preventive maintenance etc. and use it in instrumentation & maintenance work

PC4. verify and use the plant working and instrument document relevant to a particular Instrument tag/control loop being worked uponPlant working: Main process plants; package units such as boilers, heaters, compressors chillers etc.Instrument documents: P and I diagram; instrument index/data sheets/hook up diagram/loop diagram/instrument layout diagram/wiring diagrams/cause and effect diagram

Perform servicing and routine checks as instructed

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

PC5. check the maintenance requests for instruments connected with process control and resolve the problems as per instructionsInstruments connected with process control problem solving: Measurement sensors and associated impulse lines/sensor cables/Pneumatic/electronic transmitters etc.; Controllers and control room receivers/ Control valves and other final control elements etc.

PC6. perform basic overhaul and testing of process control equipment as per instructions. Instruments connected with process control for overhaul and testing: Control Valve accessories, Solenoid Valves, Fail safe shut down devices Pneumatic and Digital Valve positioners /Control Valve Data Sheet, control Valve characteristics /Overhaul, testing and calibration of Control Valves etc.

PC7. carry out routine checks of Analyzer sampling system/ Sensor and electronics section (liquid analyzers, Gas analyzers, Gas Chromatograph and accessories in Analyzer house/Calibration Gas cylinders storage and procedures etc.

Identify and locate various equipment and devices

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

PC8. check the field devices and identifies the interface units able to work on the system with guidance.

PC9. locate and identify faults in Package Units Boilers, Heaters, Compressors, Chillers etc. relating to operation of package units, location, etc.

PC10. undertake routines checks and perform basic trouble shooting in process package units.

PC11. locate and identify faults in the fire and gas field devices, identify interface units

PC12. perform maintenance work on the fire and gas system with guidance

Perform visual integrity checks of field installations

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

PC13. check for visible damage or wrong installation of specified field Instruments by various causes (in an inventory list otherwise provided by the Supervisor Various causes: prominent damage to accessories of the specified Instruments caused by impact of an external body; Check for water ingress in indoor working are a due to seepage/roof leaks /damaged windows; misuse of installation by other agencies for example, using instrumentals on a support or for scaffolding buildup; prominent deterioration due to environment for example, corrosion / proximity to hot surfaces / process leaks etc

PC14. check for improper closure of junction boxes, panels, cable termination/ tubing /impulse piping connection etc.

PC15. check for unauthorized /unexplained cable connection, disconnection/ process impulse lines / instrument air connection/disconnectio

PC16. check for potential electrical problems due to deviation from standard electrical practice

PC17. check for unused flood light/ field plug connections with trailing cable/ bare, untagged or un-insulated wires

PC18. check for any modifications or deviation in explosion proof closures and intrinsic safety installation

Perform housekeeping and lighting related checks

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

PC19. check for wet/slippery work areas, improper storage of items and cluttering of items on work areas. These are potential safety hazards

PC20. check for lighting and their operation. Check for unsafe temporary wiring of lighting

Monitor and maintain Consumables and perform follow-up

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

PC21. check for excessive consumption /visible wastage of cleaning solvents, lubrication oil and grease/related consumables such as waste cloth and gloves

PC22. check for proper storage of solvent and waste cloth (potential fire hazard).

PC23. perform follow-up action as per assigned areas of responsibility and stipulated instructions. Items found unusual outside this boundary to be reported to supervisor and obtain required approval/endorsement

Take actions to resolve areas of concern

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

PC24. prepare a list of problems identified

PC25. follow standard procedure and instruction manual to rectify the problems

PC26. report to supervisor that problems that could not be rectified promptly

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. the purpose of the process plant and its operations.

KU2. the layout of the plant and the location of various facilities.

KU3. the site conditions and how these impact the operation of instrumentation and control equipment.

KU4. the organization and reporting structure.

KU5. rules and regulations to be followed under normal and emergency conditions.

KU6. working hours, shifts, off days and leave entitlements.

KU7. the job description and responsibility, if any.

KU8. type of chemicals and other process material used in the organization and how these impact the site conditions.

KU9. hazardous chemicals and their handling procedures.

KU10. type of instruments and controllers used in the plant.

KU11. type of instruments, accessories and their locations that falls under the individuals domain of work.

KU12. how instrumentation is located using plant layout drawings.

KU13. how instrumentation maintenance is performed in the organization

Generic Skills (GS)

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

GS1. use formats and check list for site readiness planning and reports

GS2. write emails and messages about site related issues.

GS3. read company policy related to site readiness.

GS4. read formats for site readiness check sheets, list.

GS5. describe condition of instruments and accessories and issues to co-workers and supervisor.

GS6. communicate to the management in meetings about site issues which need management attention.

GS7. interact with co-workers and gather information related to process and instruments conditions.

GS8. make decisions pertaining to the scope of work

GS9. make decisions about the site, in consultation with the supervisor

GS10. prioritize daily tasks to conduct site survey effectively

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

GS12. support customer when they need help

GS13. diagnoses reasons for down time due to instrument failure.

GS14. track recurring failures in instruments for reasons and concludes.

GS15. identify immediate or temporary solutions to resolve delays and discuss with the supervisor

GS16. use the existing information to optimize solution and company business.

GS17. analyze problems and identify causes and possible solutions

GS18. analyze and evaluate the information gathered from observation, experience, reasoning, or communication, as a guide to thought and action.

GS19. 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
Follow plant working and instrumentation documents	**9**	**9**	**-**	**-**
PC1. read, interpret and follow the process plant related instructions and directives, including equipment required, location, lay out, procedures etc.	2	2	-	-
PC2. read, interpret and follow the the rules regarding various permits to work and use the right one depending on the job he/she undertakes.	2	2	-	-
PC3. make the check list consisting of site hygiene, calibration, preventive maintenance etc. and use it in instrumentation & maintenance work	2	2	-	-
PC4. verify and use the plant working and instrument document relevant to a particular Instrument tag/control loop being worked uponPlant working: Main process plants; package units such as boilers, heaters, compressors chillers etc.Instrument documents: P and I diagram; instrument index/data sheets/hook up diagram/loop diagram/instrument layout diagram/wiring diagrams/cause and effect diagram	3	3	-	-
Perform servicing and routine checks as instructed	**9**	**9**	**-**	**-**
PC5. check the maintenance requests for instruments connected with process control and resolve the problems as per instructionsInstruments connected with process control problem solving: Measurement sensors and associated impulse lines/sensor cables/Pneumatic/electronic transmitters etc.; Controllers and control room receivers/ Control valves and other final control elements etc.	3	3	-	-
PC6. perform basic overhaul and testing of process control equipment as per instructions. Instruments connected with process control for overhaul and testing: Control Valve accessories, Solenoid Valves, Fail safe shut down devices Pneumatic and Digital Valve positioners /Control Valve Data Sheet, control Valve characteristics /Overhaul, testing and calibration of Control Valves etc.	3	3	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC7. carry out routine checks of Analyzer sampling system/ Sensor and electronics section (liquid analyzers, Gas analyzers, Gas Chromatograph and accessories in Analyzer house/Calibration Gas cylinders storage and procedures etc.	3	3	-	-
Identify and locate various equipment and devices	**10**	**10**	**-**	**-**
PC8. check the field devices and identifies the interface units able to work on the system with guidance.	2	2	-	-
PC9. locate and identify faults in Package Units Boilers, Heaters, Compressors, Chillers etc. relating to operation of package units, location, etc.	2	2	-	-
PC10. undertake routines checks and perform basic trouble shooting in process package units.	2	2	-	-
PC11. locate and identify faults in the fire and gas field devices, identify interface units	2	2	-	-
PC12. perform maintenance work on the fire and gas system with guidance	2	2	-	-
Perform visual integrity checks of field installations	**8**	**12**	**-**	**-**
PC13. check for visible damage or wrong installation of specified field Instruments by various causes (in an inventory list otherwise provided by the Supervisor Various causes: prominent damage to accessories of the specified Instruments caused by impact of an external body; Check for water ingress in indoor working are a due to seepage/roof leaks /damaged windows; misuse of installation by other agencies for example, using instrumentals on a support or for scaffolding buildup; prominent deterioration due to environment for example, corrosion / proximity to hot surfaces / process leaks etc	2	2	-	-
PC14. check for improper closure of junction boxes, panels, cable termination/ tubing /impulse piping connection etc.	2	2	-	-
PC15. check for unauthorized /unexplained cable connection, disconnection/ process impulse lines / instrument air connection/disconnectio	1	2	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC16. check for potential electrical problems due to deviation from standard electrical practice	1	2	-	-
PC17. check for unused flood light/ field plug connections with trailing cable/ bare, untagged or un-insulated wires	1	2	-	-
PC18. check for any modifications or deviation in explosion proof closures and intrinsic safety installation	1	2	-	-
Perform housekeeping and lighting related checks	**2**	**4**	**-**	**-**
PC19. check for wet/slippery work areas, improper storage of items and cluttering of items on work areas. These are potential safety hazards	1	2	-	-
PC20. check for lighting and their operation. Check for unsafe temporary wiring of lighting	1	2	-	-
Monitor and maintain Consumables and perform follow-up	**3**	**6**	**-**	**-**
PC21. check for excessive consumption /visible wastage of cleaning solvents, lubrication oil and grease/related consumables such as waste cloth and gloves	1	2	-	-
PC22. check for proper storage of solvent and waste cloth (potential fire hazard).	1	2	-	-
PC23. perform follow-up action as per assigned areas of responsibility and stipulated instructions. Items found unusual outside this boundary to be reported to supervisor and obtain required approval/endorsement	1	2	-	-
Take actions to resolve areas of concern	**3**	**6**	**-**	**-**
PC24. prepare a list of problems identified	1	2	-	-
PC25. follow standard procedure and instruction manual to rectify the problems	1	2	-	-
PC26. report to supervisor that problems that could not be rectified promptly	1	2	-	-
NOS Total	**44**	**56**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	IAS/N3103
NOS Name	Maintain site readiness and instrument usability as applicable for process control industry
Sector	Instrumentation
Sub-Sector	Instrumentation & Automation
Occupation	System Operation and Maintenance
NSQF Level	4
Credits	1
Version	2.0
Last Reviewed Date	NA
Next Review Date	22/08/2025
NSQC Clearance Date	22/08/2020

IAS/N3104: Perform process control preventive maintenance

Description

The OS unit is about performing preventive maintenance for general instrumentation in process controls under guidance.

Scope

The scope covers the following :

- This unit/task covers the following:
- Organize PM preparatory tasks
- Plan and execute PM schedule
- Perform PM visual checks & actions

Elements and Performance Criteria

Organize PM preparatory tasks

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.

PC2. perform the days preventive maintenance tasks and report Preventive maintenance tasks: Check sheets and related documents; check tools and tackles and calibrating equipment; wear personal protective safety equipment.

Plan and execute PM Schedule

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

PC3. prepare Preventive maintenance Process list as per instructions from process supervisor.

PC4. prepare plan for next days preventive maintenance schedule.

PC5. perform Preventive maintenance jobs as per available Preventive Maintenance Schedule.

PC6. check preventive maintenance schedule list of Field Instrumentation and controls to ensure that all jobs listed in schedule are completed

Perform PM visual checks & actions

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

PC7. perform the Visual Checks & takes corrective actions wherever possible or else transfer job to shut down list

PC8. check for abnormal vibration locates source- corrects /informs supervisor

PC9. check for gland leak /instrument air leaks/ control valve bonnet and body flange leaks and report to Process supervisor& Instrument supervisor.

PC10. check pneumatic and electric connections to solenoid valve/pneumatic connections in Pneumatic transmitters etc. and rectifies fault after informing process supervisor

PC11. prepare and consolidate daily-diagnostic messages from control valves and record the same in either Preventive Maintenance list or opportunistic shut down list for execution.

PC12. perform preventive maintenance jobs during annual shut down or opportunistic shut down list.

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. preventive Maintenance norms as defined by the company
KU2. production targets and production loss figures for the month and contribution by control valves
KU3. aware of Maintenance Policy of the company with respect to control valve maintenance strategy
KU4. trouble Shooting of Control valve body including valve movement and glands
KU5. trouble Shooting of Actuator section and valve positioners and diagnostic messages from Digital Valve controller
KU6. trouble Shooting of Control valve accessories
KU7. trouble Shooting of Solenoid valve and Limit switches
KU8. hazardous area zone classification and process media hazards.
KU9. use of Control Valve Manual when required.
KU10. 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 site readiness planning and reports
GS2. write emails and messages about site related issues.
GS3. read company policy related to preventive maintenance
GS4. read monthly down time and resulting production loss
GS5. use of work permit system
GS6. read formats for preventive maintenance check sheets, predictive maintenance list
GS7. describe condition of control valves and accessories and issues to coworkers and supervisor
GS8. communicate to the management in meetings about maintenance issues which need management attention
GS9. interact with co-workers 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. capture 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 valves 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 optimize solution and company business.
GS18. analyze problems and identify causes and possible solutions

GS19. 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
Organize PM preparatory tasks	**10**	**10**	**-**	**-**
PC1. obtain work permit (mandatory) from the Process supervisor before commencing maintenance work.	5	5	-	-
PC2. perform the days preventive maintenance tasks and report Preventive maintenance tasks: Check sheets and related documents; check tools and tackles and calibrating equipment; wear personal protective safety equipment.	5	5	-	-
Plan and execute PM Schedule	**16**	**16**	**-**	**-**
PC3. prepare Preventive maintenance Process list as per instructions from process supervisor.	4	4	-	-
PC4. prepare plan for next days preventive maintenance schedule.	4	4	-	-
PC5. perform Preventive maintenance jobs as per available Preventive Maintenance Schedule.	4	4	-	-
PC6. check preventive maintenance schedule list of Field Instrumentation and controls to ensure that all jobs listed in schedule are completed	4	4	-	-
Perform PM visual checks & actions	**24**	**24**	**-**	**-**
PC7. perform the Visual Checks & takes corrective actions wherever possible or else transfer job to shut down list	4	4	-	-
PC8. check for abnormal vibration locates source-corrects /informs supervisor	4	4	-	-
PC9. check for gland leak /instrument air leaks/ control valve bonnet and body flange leaks and report to Process supervisor& Instrument supervisor.	4	4	-	-
PC10. check pneumatic and electric connections to solenoid valve/pneumatic connections in Pneumatic transmitters etc. and rectifies fault after informing process supervisor	4	4	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. prepare and consolidate daily-diagnostic messages from control valves and record the same in either Preventive Maintenance list or opportunistic shut down list for execution.	4	4	-	-
PC12. perform preventive maintenance jobs during annual shut down or opportunistic shut down list.	4	4	-	-
NOS Total	**50**	**50**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	IAS/N3104
NOS Name	Perform process control preventive maintenance
Sector	Instrumentation
Sub-Sector	Instrumentation & Automation
Occupation	System Operation and Maintenance
NSQF Level	4
Credits	1
Version	2.0
Last Reviewed Date	NA
Next Review Date	22/08/2025
NSQC Clearance Date	22/08/2020

IAS/N3106: Perform predictive, corrective and shutdown maintenance for process control

Description

The OS unit is about performing predictive, corrective and shutdown maintenance for process control instrumentation.

Scope

The scope covers the following :

- This unit/task covers the following:
- Prepare Predictive Maintenance Plan and Include in schedule
- Prepare / Follow Corrective Maintenance Plan and Schedule
- Identify Corrective Maintenance Needs and Spares
- Execute Corrective Maintenance Schedule
- Support Shutdown Maintenance and Overhaul
- Complete Corrective Maintenance Check List / Report and Close CM fault list
- Brief Supervisor on Corrective Maintenance

Elements and Performance Criteria

Prepare Predictive Maintenance Plan and Include in schedule

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

PC1. check and analyze the observations of preventive maintenance visits for any recurrent issues or behavior which points to a possible problem or failure in near future

PC2. check and Identify items (instruments, control elements, cabling and other accessories) which are in conditions that need repair or replacement

PC3. prepare a list and discuss with the engineer or supervisor and identify items that need maintenance/replacement

PC4. check and identify the items needs for corrective maintenance and incorporate in list along with the schedule

Prepare / Follow Corrective Maintenance Plan and Schedule

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

PC5. prepare corrective maintenance plan from the identified needs.

PC6. prepare the schedule for execution of corrective maintenance list

Identify Corrective Maintenance Needs and Spares

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

PC7. check and analyze the observations, reports and behavior of the field instruments and Identify needs for corrective maintenance in the plant. Create Corrective Maintenance List.

PC8. check and identify spares required for corrective maintenance and prepare list

PC9. ensure the availability of spares and Share the list with the designated persons

Execute Corrective Maintenance Schedule

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

PC10. carry out maintenance of items in the Corrective maintenance list

PC11. obtain work permit from the process supervisor before commencing maintenance work

PC12. check and identify necessary documents and equipment: Documents and equipment: Check sheets and related documents; tools, tackles and calibrating equipment; spares parts, complete instruments/assemblies and consumables; required for corrective maintenance; personal protective safety equipment;

PC13. perform adjustment/ calibration/part replacement/ instrument replacement as specified

Support Shutdown Maintenance and Overhaul

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

PC14. perform corrective maintenance jobs during annual shut down or opportunistic shut down list.

PC15. perform requested services relating to instruments, controllers, field wiring, calibration, testing and adjustments during shutdown and overhaul.

PC16. check with other departments (such as cranes, workshop and process operations, mechanical, electrical, central stores) to complete extremely time critical activities and support start up.

Complete Corrective Maintenance Check List / Report and Close CM fault list

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

PC17. ensure entry of corrective maintenance check lists and prepare reports.

PC18. perform all faults reported

PC19. perform corrective maintenance schedule list of Field Instrumentation and controls. Close the list.

Brief Supervisor on Corrective Maintenance

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

PC20. report supervisor about corrective maintenance performed.

PC21. report to supervisor about Faults / issues if any.

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. PM, CM and PRM norms of the company.

KU2. the impact of CM on productivity and the importance of avoiding delays/production loss

KU3. how to prioritize and synchronize the timing for corrective maintenance work. during Opportunistic shut downs /annual shut down.

KU4. production targets and production loss figures for the month and contribution by instruments and control valves.

KU5. the critical role of inter personal skills during shut down activities due to strict time line for completion and start-up. Extensive coordination with multiple departments is needed (such asCranes, Workshop and Process operations, Mechanical, Electrical, Central stores).

KU6. possesses functional knowledge of all types of instrumentation and control hardware in the plant

KU7. how to use the right instrumentation documentation for maintenance

KU8. critical control loops associated with various emergency shut down systems

KU9. how to use calibrators, associated test equipment and test pumps.

KU10. importance of material of construction of sensing elements and control valves in process media

KU11. vendor manuals, drawings and documents including:a) P & I Diagramb) Hook up & Loop Diagramsc) Layout diagramsd) Instrument liste) Circuit diagram

KU12. critical control loops associated with various Emergency Shut Down systems (ESD).

KU13. trouble shooting of: 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

KU14. hazardous area zone classification and process media hazards.

KU15. use of control valve manual when required.

KU16. partial stroke test of control valve (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 site readiness 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 field instruments and control valves 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 co-workers 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. capture 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 field instruments, control valves 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 optimize solution and company business

GS18. analyze problems and identify causes and possible solutions

GS19. 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
Prepare Predictive Maintenance Plan and Include in schedule	**8**	**12**	**-**	**-**
PC1. check and analyze the observations of preventive maintenance visits for any recurrent issues or behavior which points to a possible problem or failure in near future	2	3	-	-
PC2. check and Identify items (instruments, control elements, cabling and other accessories) which are in conditions that need repair or replacement	2	3	-	-
PC3. prepare a list and discuss with the engineer or supervisor and identify items that need maintenance/replacement	2	3	-	-
PC4. check and identify the items needs for corrective maintenance and incorporate in list along with the schedule	2	3	-	-
Prepare / Follow Corrective Maintenance Plan and Schedule	**4**	**6**	**-**	**-**
PC5. prepare corrective maintenance plan from the identified needs.	2	3	-	-
PC6. prepare the schedule for execution of corrective maintenance list	2	3	-	-
Identify Corrective Maintenance Needs and Spares	**6**	**9**	**-**	**-**
PC7. check and analyze the observations, reports and behavior of the field instruments and Identify needs for corrective maintenance in the plant. Create Corrective Maintenance List.	2	3	-	-
PC8. check and identify spares required for corrective maintenance and prepare list	2	3	-	-
PC9. ensure the availability of spares and Share the list with the designated persons	2	3	-	-
Execute Corrective Maintenance Schedule	**8**	**12**	**-**	**-**
PC10. carry out maintenance of items in the Corrective maintenance list	2	3	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. obtain work permit from the process supervisor before commencing maintenance work	2	3	-	-
PC12. check and identify necessary documents and equipment: Documents and equipment: Check sheets and related documents; tools, tackles and calibrating equipment; spares parts, complete instruments/assemblies and consumables; required for corrective maintenance; personal protective safety equipment;	2	3	-	-
PC13. perform adjustment/ calibration/part replacement/ instrument replacement as specified	2	3	-	-
Support Shutdown Maintenance and Overhaul	**6**	**9**	**-**	**-**
PC14. perform corrective maintenance jobs during annual shut down or opportunistic shut down list.	2	3	-	-
PC15. perform requested services relating to instruments, controllers, field wiring, calibration, testing and adjustments during shutdown and overhaul.	2	3	-	-
PC16. check with other departments (such as cranes, workshop and process operations, mechanical, electrical, central stores) to complete extremely time critical activities and support start up.	2	3	-	-
Complete Corrective Maintenance Check List / Report and Close CM fault list	**6**	**6**	**-**	**-**
PC17. ensure entry of corrective maintenance check lists and prepare reports.	2	2	-	-
PC18. perform all faults reported	2	2	-	-
PC19. perform corrective maintenance schedule list of Field Instrumentation and controls. Close the list.	2	2	-	-
Brief Supervisor on Corrective Maintenance	**4**	**4**	**-**	**-**
PC20. report supervisor about corrective maintenance performed.	2	2	-	-
PC21. report to supervisor about Faults / issues if any.	2	2	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
NOS Total	**42**	**58**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	IAS/N3106
NOS Name	Perform predictive, corrective and shutdown maintenance for process control
Sector	Instrumentation
Sub-Sector	Instrumentation & Automation
Occupation	System Operation and Maintenance
NSQF Level	4
Credits	1
Version	2.0
Last Reviewed Date	NA
Next Review Date	22/08/2025
NSQC Clearance Date	22/08/2020

IAS/N3107: Perform installation of instruments and loop testing as per instructions

Description

The OS unit is about installing instruments and performing loop testing under the guidance of the process engineer and instrumentation engineer. generally done before the plant start-up or after any major upgrade or overhaul.

Scope

The scope covers the following :

- This unit/task covers the following:
- Obtaining appropriate work permit
- Installation of instruments
- Organizing loop testing preparatory tasks
- Performing Loop Test
- Performing rework and verifying the loop

Elements and Performance Criteria

Obtaining appropriate work permit

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

PC1. obtain work permit of the right kind from the process supervisor before commencing work

Installation of instruments

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

PC2. verify for each loop listed for Loop Test, perform operational check of the field instrument, controller and HMI elements etc.

PC3. ensure the continuity test of signal from the instruments to the control panel namely PLC, DCS, ESD or any other logical system

PC4. ensure that the field instrument is calibrated according to specifications.

PC5. ensure that the field instrument is properly connected to PLC, DCS or any other system.

PC6. check the logic in the DCS is ranged according to the field instruments and engineering units

PC7. ensure the range of calibration, alarms, set points and any signal included in the loop folder

PC8. ensure the testing of DCS signal from/to all instruments and actuators using appropriate signal generator such as HART communicator, temperature generator or 4-20mA generator, depending instrument type.

PC9. ensure testing ESD operation with specified tools to generate the required pressure, level or other parameter

PC10. ensure the testing of Loops for different type of control action such as direct, reverse, split range etc and record all data in the loop folder

PC11. check the signal from the field instrument is received by the control algorithm and the appropriate corrective output signal is generated and received by the final control element.

PC12. perform the calibration of field control device according to specifications

PC13. prepare the Loop Test report as defined in the SOP.

Organizing loop testing preparatory tasks

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

PC14. identify the scope and the plan of the Loop Testing as per Loop test list

PC15. co-ordinate with the team working at the end with PLC/DCS/other system, as per the loop testing procedure

PC16. ensure availability of installation drawings, documents, specifications, along with the tag numbers, configurations and other details needed for loop test

PC17. ensure availability of the instruments, calibrating equipments and accessories, needed for the loop test

Performing Loop Test

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

PC18. check the list of corrections required to be carried out.

PC19. identify the type of correction needed adjustment, refitting, cleaning, overhaul, recalibration, wiring change, replacement

PC20. perform the desired action and verify the performance of the device and maintain records

PC21. ensure drawings/circuits incorporate changes during rework as per SOP.

Performing rework and verifying the loop

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

PC22. check the list of corrections required to be carried out.

PC23. identify the type of correction needed adjustment, refitting, cleaning, overhaul, recalibration, wiring change, replacement or any other action.

PC24. perform the desired action and verify the performance of the device and maintain records

PC25. ensure drawings/circuits incorporate changes during rework as per SOP.

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. verify the Installation policies and norms as defined by the company

KU2. loop Testing policies and norms as defined by the company

KU3. types and specifications for Instruments used in the process plant.

KU4. installation procedures for instruments used in the process plant

KU5. calibration procedures for instruments used in the process plant.

KU6. trouble shooting of instruments used in the process plant

KU7. types and specifications for control elements used in the process plant

KU8. tools and equipment used for installation and calibration.

KU9. installation procedures for control elements used in the process plant.

KU10. calibration procedures for control elements used in the process plant.

KU11. trouble shooting of control elements used in the process plant

KU12. loop testing procedure defined for the process plant.

KU13. hazardous area zone classification and process media hazards

KU14. safety norms for installation and testing

Generic Skills (GS)

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

GS1. use formats and check list for installation planning and reports
GS2. formats and check list for loop test planning and reports
GS3. write emails and messages about site related issues
GS4. specifications, documents, drawings, lists, formats for instrument installation and testing and reporting
GS5. specifications, documents, drawings, lists, formats for loop testing
GS6. describe clearly the condition, values, settings and other details of instruments and accessories and issues to members of loop testing team
GS7. follow the instructions passed on by the members of loop testing team
GS8. communicate to the management in meetings about technical issues which need management attention.
GS9. interact with co-workers and gather information related to conditions of the instruments and process
GS10. make decisions about the proper functioning of instruments and sharing the information with co-workers
GS11. plan and prioritize installation work effectively
GS12. plan and prioritize loop testing work effectively.
GS13. capture real needs of the other teams (who request services) and suggest most appropriate solution.
GS14. support other teams when they need help.
GS15. diagnoses reasons for down time due to instrument malfunction or failure
GS16. track recurring failures in instrument and analyses reasons and concludes
GS17. identify immediate or temporary solutions to resolve delays and discuss with the supervisor
GS18. use the existing information to optimize solution and company business
GS19. analyze problems and identify causes and possible solutions
GS20. analyze, and evaluate the information gathered from observation, experience, reasoning, or communication, as a guide to thought and action
GS21. 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
Obtaining appropriate work permit	**2**	**3**	**-**	**-**
PC1. obtain work permit of the right kind from the process supervisor before commencing work	2	3	-	-
Installation of instruments	**24**	**36**	**-**	**-**
PC2. verify for each loop listed for Loop Test, perform operational check of the field instrument, controller and HMI elements etc.	2	3	-	-
PC3. ensure the continuity test of signal from the instruments to the control panel namely PLC, DCS, ESD or any other logical system	2	3	-	-
PC4. ensure that the field instrument is calibrated according to specifications.	2	3	-	-
PC5. ensure that the field instrument is properly connected to PLC, DCS or any other system.	2	3	-	-
PC6. check the logic in the DCS is ranged according to the field instruments and engineering units	2	3	-	-
PC7. ensure the range of calibration, alarms, set points and any signal included in the loop folder	2	3	-	-
PC8. ensure the testing of DCS signal from/to all instruments and actuators using appropriate signal generator such as HART communicator, temperature generator or 4-20mA generator, depending instrument type.	2	3	-	-
PC9. ensure testing ESD operation with specified tools to generate the required pressure, level or other parameter	2	3	-	-
PC10. ensure the testing of Loops for different type of control action such as direct, reverse, split range etc and record all data in the loop folder	2	3	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. check the signal from the field instrument is received by the control algorithm and the appropriate corrective output signal is generated and received by the final control element.	2	3	-	-
PC12. perform the calibration of field control device according to specifications	2	3	-	-
PC13. prepare the Loop Test report as defined in the SOP.	2	3	-	-
Organizing loop testing preparatory tasks	**8**	**9**	**-**	**-**
PC14. identify the scope and the plan of the Loop Testing as per Loop test list	2	3	-	-
PC15. co-ordinate with the team working at the end with PLC/DCS/other system, as per the loop testing procedure	2	2	-	-
PC16. ensure availability of installation drawings, documents, specifications, along with the tag numbers, configurations and other details needed for loop test	2	2	-	-
PC17. ensure availability of the instruments, calibrating equipments and accessories, needed for the loop test	2	2	-	-
Performing Loop Test	**5**	**4**	**-**	**-**
PC18. check the list of corrections required to be carried out.	1	1	-	-
PC19. identify the type of correction needed adjustment, refitting, cleaning, overhaul, recalibration, wiring change, replacement	1	1	-	-
PC20. perform the desired action and verify the performance of the device and maintain records	1	1	-	-
PC21. ensure drawings/circuits incorporate changes during rework as per SOP.	2	1	-	-
Performing rework and verifying the loop	**5**	**4**	**-**	**-**
PC22. check the list of corrections required to be carried out.	1	1	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC23. identify the type of correction needed adjustment, refitting, cleaning, overhaul, recalibration, wiring change, replacement or any other action.	1	1	-	-
PC24. perform the desired action and verify the performance of the device and maintain records	1	1	-	-
PC25. ensure drawings/circuits incorporate changes during rework as per SOP.	2	1	-	-
NOS Total	**44**	**56**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	IAS/N3107
NOS Name	Perform installation of instruments and loop testing as per instructions
Sector	Instrumentation
Sub-Sector	Instrumentation & Automation
Occupation	System Operation and Maintenance
NSQF Level	4
Credits	1
Version	3.0
Last Reviewed Date	NA
Next Review Date	22/08/2025
NSQC Clearance Date	22/08/2020

IAS/N3108: Perform process control reporting tasks

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:
- Perform process control reporting tasks

Elements and Performance Criteria

Perform process control reporting tasks

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

PC1. report the faults/issues to immediate supervisor

PC2. ensure complete entry of preventive maintenance check lists/reports

PC3. ensure complete entry of corrective maintenance check lists /reports

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

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

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. basic company policy and maintenance strategy as applied to control valves.

KU2. importance of reporting potential failures during site readiness visits / preventive maintenance checks/observation to supervisor

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

KU4. 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

GS8. with complete details to the supervisor and co-workers as appropriate

GS9. make decisions on a suitable course of action or response keeping in view resource utilization while meeting commitments

GS10. prioritize jobs during multiple breakdown situations.

GS11. plan and organize work to achieve targets and deadlines

GS12. capture reel needs of the customer and suggest most appropriate solution

GS13. support customer when they need help

GS14. can diagnose control valve faults and communicate effectively to process and instrumentation supervisor.

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. 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 process control reporting tasks	**30**	**30**	**-**	**-**
PC1. report the faults/issues to immediate supervisor	5	5	-	-
PC2. ensure complete entry of preventive maintenance check lists/reports	5	5	-	-
PC3. ensure complete entry of corrective maintenance check lists /reports	5	5	-	-
PC4. report on noticing of any visible changes in control valve installation or its accessories. report for immediate attention of supervisor	5	5	-	-
PC5. report any theft in control valve assembly/spares to supervisor	5	5	-	-
PC6. report suspicious movement of new persons near control valve installation to security and supervisor	5	5	-	-
NOS Total	**30**	**30**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	IAS/N3108
NOS Name	Perform process control reporting tasks
Sector	Instrumentation
Sub-Sector	Instrumentation & Automation
Occupation	System Operation and Maintenance
NSQF Level	4
Credits	1
Version	2.0
Last Reviewed Date	NA
Next Review Date	22/08/2025
NSQC Clearance Date	22/08/2020

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

IAS/N9002: Health and safety in workplace

Description

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

Scope

The scope covers the following :

- Adhere to standard safety procedures of the company
- Maintain good health and posture
- Effective waste management/recycling practices
- Adopt learning and self-direction
- Develop system thinking in problem solving
- Material/Resources conservation practices

Elements and Performance Criteria

Adhere to standard safety procedures of the company

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

PC1. comply with general safety procedures and those for handling an equipment, hazardous material or tool, followed in the company

PC2. remove finger rings or any other metal objects likely to interfere with the work before working on the unit

PC3. use of safety materials such as goggles, gloves, ear plugs, caps, ESD pins, covers, shoes, etc.

PC4. escalate the issue about hazardous materials or things found in the premises or any breach of safety procedure in the company

PC5. ensure zero accidents at work

PC6. avoid damage of components due to negligence in ESD procedures or any other loss due to safety negligence

PC7. participate regularly in fire drills or other safety related workshops organised by the company

Maintain good health and posture

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

PC8. maintain appropriate posture, especially in long hours of sitting or standing position and in handling heavy materials

PC9. participate in company organised health sessions such as yoga, physiotherapy or games

PC10. handle heavy and hazardous materials with care, while maintaining appropriate posture, using suitable tools and handling equipment such as trolleys, jacks and ladders

Effective waste management/recycling practices

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

PC11. identify recyclable and non-recyclable, and hazardous waste generated to be segregated accordingly

PC12. dispose non-recyclable waste and hazardous waste as per recommended processes

PC13. deposit recyclable and reusable material at identified location

Adopt learning and self-direction

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

PC14. understand importance of skill advancement and develop mastery

PC15. adapt product / service to meet success criteria

PC16. understand accountability for timely completion of tasks

PC17. manage to express emotions in appropriate ways at workplace and understand the cause for the emotions

Develop system thinking in problem solving

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

PC18. analyse the problem accurately and communicate different possible solutions to the problem

PC19. manage to estimate the cause of the problem and validate

Material/Resources conservation practices

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

PC20. identify ways to optimize usage of material including water and electricity / energy in various tasks/activities/processes

PC21. check for spills/leakages in various tasks/activities/processes and plug them or escalate to appropriate authority

PC22. carry out routine cleaning of tools, machines and equipment

PC23. check if the equipment/machine is functioning normally before commencing work and rectify wherever required and report malfunctioning (fumes/sparks/emission/vibration/noise) or any lapse in maintenance of equipment

PC24. ensure electrical equipment and appliances are properly connected and turned off when not in use

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. company's policies on incentives,delivery standards, and personnel management

KU2. company occupational safety and health policy

KU3. company emergency evacuation procedure

KU4. Company's medical policy

KU5. how to maintain the work area safe and secure

KU6. how to handle hazardous materials, tools and equipment

KU7. procedures to be followed during emergencies such as fire accidents, electrocution, etc.

KU8. long term value of good posture and use of appropriate handling equipment

KU9. electrical grounding practices

KU10. safety regulations and standards and how to apply these

KU11. common sources of pollution and ways to minimize it

KU12. categorisation of waste into dry, wet, recyclable, non-recyclable and items of single-use plastics

KU13. usage of different colours of dustbins
KU14. waste management and methods of waste disposal
KU15. organisation's procedures for minimizing mistakes
KU16. strategies pertinent to their field (such as internet searches, asking peers and managers, enrolling for courses and certifications, etc.) that can be used to pursue an advancement in their skills
KU17. one should be able to identify the key performance indicators for the new tasks
KU18. seek feedback from supervisor and deal in constructive manner
KU19. understand that emotions are accompained by a physical state, thought and feeling
KU20. one should be able to interpret timelines and goals set by the manager and break them into sub-goals and tasks
KU21. importance of quality and timely delivery of the product/service
KU22. potential hazards, risks and threats based on the nature of work
KU23. ways of efficiently managing material and water in the process
KU24. layout of the workstation and electrical and thermal equipment used
KU25. efficient and inefficient utilization of material and water
KU26. basics of electricity and prevalent energy efficient devices
KU27. ways to recognize common electrical problems
KU28. common practices of conserving electricity

Generic Skills (GS)

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

GS1. fill up appropriate forms, activity logs and attendance sheets as per organisation's format in English and/or local language
GS2. write basic accident or incident report as witnessed in appropriate format to relevant authority
GS3. read/listen and interpret information correctly from relevant instruction documents, manuals, health and safety instructions, memos, etc. applicable to the job, in English and/or local language
GS4. read relevant signage, warnings, labels or descriptions on equipment, etc. while carrying out work activities
GS5. question co-workers in order to understand the safety and health issues
GS6. inform co-workers about safety and health issues
GS7. report issues and problems relating to safety and health to managers in clear terms
GS8. make decisions pertaining to safety and health issues at workplace
GS9. plan and organise work conforming to the safety and health norms of the company
GS10. make decisions about escalating safety and health issues at workplace to managers
GS11. discuss problems related to safety and health, evaluate the possible solution(s) and arrive at optimum /best possible solution(s) in consultation with concerned people
GS12. use the existing information to arrive at actionable decision points
GS13. use the existing information for improving customer satisfaction

GS14. use the existing information to optimise solution and company business

GS15. analyse problems and identify causes and possible solutions

GS16. apply, analyse and evaluate the information gathered from observation, experience, reasoning, or communication, as a guide to thought and action

GS17. anticipate problems, risks and opportunities and utilise these for mitigation and business optimisation

GS18. communicate with colleagues on the significance of greening of jobs

GS19. identify cause and effect of greening of jobs

GS20. record data on waste disposal at workplace

GS21. demonstrate commitment towards self, and initiative to advance skills levels by exploring various pathways to expand one's own learning

GS22. incorporate feedback into one's mental model of task, and bring it into practice

GS23. be punctual, utilize time and manage workload efficiently

GS24. evaluate strategies to maintain, enhance or reduce the intensity of heightened emotional response

GS25. test a hypothesis about the cause of the problem

GS26. identify and ask significant questions to clarify the various points of view on the problem to better understand the problem

GS27. record data on waste disposal at workplace

GS28. make timely decisions for efficient utilization of resources

GS29. complete statutory documents relevant to safety and hygiene

GS30. read Standard Operating Practices (SOP) documents

GS31. communicate with colleagues on the significance of greening of jobs

GS32. complete tasks efficiently and accurately within stipulated time

GS33. work with supervisors/team members to carry out work related tasks

GS34. identify cause and effect of greening of jobs

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Adhere to standard safety procedures of the company	**13**	**12**	**-**	**5**
PC1. comply with general safety procedures and those for handling an equipment, hazardous material or tool, followed in the company	2	2	-	1
PC2. remove finger rings or any other metal objects likely to interfere with the work before working on the unit	2	4	-	-
PC3. use of safety materials such as goggles, gloves, ear plugs, caps, ESD pins, covers, shoes, etc.	4	2	-	1
PC4. escalate the issue about hazardous materials or things found in the premises or any breach of safety procedure in the company	1	1	-	-
PC5. ensure zero accidents at work	1	1	-	1
PC6. avoid damage of components due to negligence in ESD procedures or any other loss due to safety negligence	1	1	-	1
PC7. participate regularly in fire drills or other safety related workshops organised by the company	2	1	-	1
Maintain good health and posture	**6**	**8**	**-**	**1**
PC8. maintain appropriate posture, especially in long hours of sitting or standing position and in handling heavy materials	2	3	-	1
PC9. participate in company organised health sessions such as yoga, physiotherapy or games	2	1	-	-
PC10. handle heavy and hazardous materials with care, while maintaining appropriate posture, using suitable tools and handling equipment such as trolleys, jacks and ladders	2	4	-	-
Effective waste management/recycling practices	**4**	**5**	**-**	**1**
PC11. identify recyclable and non-recyclable, and hazardous waste generated to be segregated accordingly	2	1	-	1

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. dispose non-recyclable waste and hazardous waste as per recommended processes	1	3	-	-
PC13. deposit recyclable and reusable material at identified location	1	1	-	-
Adopt learning and self-direction	**4**	**5**	**-**	**1**
PC14. understand importance of skill advancement and develop mastery	1	1	-	1
PC15. adapt product / service to meet success criteria	1	2	-	-
PC16. understand accountability for timely completion of tasks	1	1	-	-
PC17. manage to express emotions in appropriate ways at workplace and understand the cause for the emotions	1	1	-	-
Develop system thinking in problem solving	**2**	**2**	**-**	**1**
PC18. analyse the problem accurately and communicate different possible solutions to the problem	1	1	-	-
PC19. manage to estimate the cause of the problem and validate	1	1	-	1
Material/Resources conservation practices	**11**	**18**	**-**	**1**
PC20. identify ways to optimize usage of material including water and electricity / energy in various tasks/activities/processes	2	2	-	-
PC21. check for spills/leakages in various tasks/activities/processes and plug them or escalate to appropriate authority	1	2	-	-
PC22. carry out routine cleaning of tools, machines and equipment	3	6	-	-
PC23. check if the equipment/machine is functioning normally before commencing work and rectify wherever required and report malfunctioning (fumes/sparks/emission/vibration/noise) or any lapse in maintenance of equipment	3	4	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC24. ensure electrical equipment and appliances are properly connected and turned off when not in use	2	4	-	1
NOS Total	**40**	**50**	**-**	**10**

National Occupational Standards (NOS) Parameters

NOS Code	IAS/N9002
NOS Name	Health and safety in workplace
Sector	Instrumentation
Sub-Sector	Instrumentation & Automation
Occupation	Generic
NSQF Level	4
Credits	1
Version	2.0
Last Reviewed Date	NA
Next Review Date	11/08/2025
NSQC Clearance Date	11/08/2020

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	-	-	-	-

Qualification Pack

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/N3103.Maintain site readiness and instrument usability as applicable for process control industry	44	56	-	-	100	15
IAS/N3104.Perform process control preventive maintenance	50	50	-	-	100	10
IAS/N3106.Perform predictive, corrective and shutdown maintenance for process control	42	58	-	-	100	15
IAS/N3107.Perform installation of instruments and loop testing as per instructions	44	56	-	-	100	15
IAS/N3108.Perform process control reporting tasks	30	30	-	-	60	15
IAS/N9001.Work effectively with teams	40	50	-	10	100	10
IAS/N9002.Health and safety in workplace	40	50	-	10	100	10
DGT/VSQ/N0102.Employability Skills (60 Hours)	20	30	0	0	50	10
Total	**310**	**380**	**0**	**0**	**710**	**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.