



Cabling Technician

QP Code: IAS/Q5603

Version: 2.0

NSQF Level: 4

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Qualification Pack

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IAS/Q5603: Cabling Technician

Brief Job Description

The Cabling Technician is a multi-skilled person who can plan and lay different types of cables and do the termination and interconnection work involved in diverse environments such as process plants, factory automation and building automation projects.

Personal Attributes

This job requires the individual to be disciplined, pay attention to details, to have an interdisciplinary aptitude and ability to learn. The person should be willing to work for long hours to meet deadlines and be able to cope with pressure.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. [IAS/N5609: Plan, lay and connect/terminate different types of cables](#)
2. [IAS/N9001: Work effectively with teams](#)
3. [IAS/N9002: Health and safety in workplace](#)
4. [DGT/VSQ/N0102: Employability Skills \(60 Hours\)](#)

Qualification Pack (QP) Parameters

Sector	Instrumentation
Sub-Sector	Instrumentation & Automation
Occupation	Installation and Commissioning, Laying of Cables and Termination
Country	India
NSQF Level	4
Credits	14
Aligned to NCO/ISCO/ISIC Code	NCO-2015/NIL

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Minimum Educational Qualification & Experience	8th Class (+ 2 year NTC/ NAC) OR 10th grade pass and pursuing continuous schooling OR 10th Class with 1 Year of experience OR 10th Class (Completed 1st year or pursuing 02nd year of 03 years engineering diploma (after 10th) in relevant field) OR Previous relevant Qualification of NSQF Level (Previous relevant Qualification of NSQF Level 3 + 1 year relevant experience)
Minimum Level of Education for Training in School	
Pre-Requisite License or Training	NA
Minimum Job Entry Age	18 Years
Last Reviewed On	NA
Next Review Date	11/08/2025
NSQC Approval Date	11/08/2020
Version	2.0
Reference code on NQR	2022/TEL/IASC/07101
NQR Version	2

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IAS/N5609: Plan, lay and connect/terminate different types of cables

Description

This NOS unit is about planning, laying and performing termination and inter-connection of different types of cables as per the design, BoQ and the material provided.

Scope

The scope covers the following :

- Perform preparatory work
- Lay conduits and pulling cables as per supplied drawings
- Perform termination and inter-connection for different types of cables

Elements and Performance Criteria

Perform preparatory work

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

- PC1.** obtain all relevant documents related to cabling, wiring, connected equipment as well as plant layout and interpret the same
- PC2.** follow the wire colour codes as specified in drawings
- PC3.** verify whether concealed conduits exist and find out their route in the premises by reading the layout drawing and by physical verification in case of following types of cables: low voltage power cable, CCTV cable, copper/fibre LAN cable
- PC4.** prepare a plan for laying cable on the wall, if concealed conduit does not exist
- PC5.** prepare a plan for route instrumentation cable
- PC6.** estimate the quantity and type of cables, conduits, tools, electrical parts, testing devices and accessories required as per the requirement of the job and obtain the same from authorised sources
- PC7.** enlist the required lengths of raceways, cable trays, and conduits for each section of cabling
- PC8.** identify the position where conduiting needs to be done by referring to layout drawings and specifications
- PC9.** make drill holes for mounting brackets etc. in the supporting structure, for mounting the making cable trays, etc.
- PC10.** select and use appropriate personal protective equipment (PPE) suitable for the type of work specified and in line with health and safety guidelines PPE should include mats, gloves, rubber footwear, etc.

Lay conduits and pulling cables as per supplied drawings

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

- PC11.** install raceways, cable trays and conduits as per procedure and drawings for the wires/cables

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- PC12.** run the cables through the conduits and raceways, along with earth wires if specified, as per approved drawings and procedures while ensuring that different types of cables are not run in same conduit or trench; this is done to avoid cross talk
- PC13.** route the cables to respective junction boxes / panels using flexible hoses or other approved methods, leaving adequate length of cable for termination
- PC14.** follow appropriate procedures such that the cables are inserted through glands in the receiving enclosure and fix them properly
- PC15.** strip the sheath / outer covering / shield to suitable length and dress the cable as per approved standard operating procedures (SOP)
- PC16.** mark all individual wires using standard ferrules with tag numbers / identification as provided in the drawing for ease of identification
- PC17.** seal the conduit ends using approved material/device

Perform termination and inter-connection for different types of cables

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

- PC18.** route the stripped end of the cable through the internal cable trays/guides to the appropriate terminals
- PC19.** route the various cables, such as instrumentation cables, low voltage power cables and copper/fibre LAN cables, through the internal cable trays/guides to the appropriate device
- PC20.** route CCTV cables (power and video/IP) to target devices and terminate on appropriate connectors using the right tools (crimping / soldering / screw, etc.)
- PC21.** check and identify types of termination inside panels
- PC22.** use cable ties appropriately to tie the wires neatly
- PC23.** terminate cables on appropriate connectors using the right tools (crimping/soldering/screw, etc.) and plug the connectors to the devices, ensuring proper mating
- PC24.** check if the shield connection is made to the specific terminal and ensure that the shield is not grounded at both ends, as it causes ground loop which is harmful for the signal
- PC25.** verify the availability of shielded cable testing equipment
- PC26.** cross-check with wiring list and follow the recommended verification procedure
- PC27.** perform continuity check of wires

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** organisation's policies on customer care culture of the community
- KU2.** organisation's code of conduct medium of communication
- KU3.** organisation's culture and typical customer profile
- KU4.** organisation's reporting structure
- KU5.** organisation's documentation policy
- KU6.** organisation's sales and after-sales policy
- KU7.** organisation's website, contact personnel and related details
- KU8.** purpose of the project, the workflow and procedure involved

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- KU9.** site conditions and how these impact the cabling work
- KU10.** rules and regulations to be followed under normal and emergency conditions
- KU11.** types of cables and wires and their material, gauges, current ratings, characteristics and usage
- KU12.** cabling tools, equipment and accessories used
- KU13.** types of cables used in CCTV applications as well as their characteristics and usage
- KU14.** process to check copper LAN cables, crimping tools, test equipment and accessories used
- KU15.** process to check the fibre LAN cables, connectors, splicing tools, test equipment and accessories used
- KU16.** standards and practices related to instrumentation cabling and low voltage power cabling
- KU17.** precautions to be taken in handling different types of cables
- KU18.** safety precautions to be taken in handling electrical equipment
- KU19.** usage of various tools and equipment

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.** note problems and details of work done on job sheet
- GS3.** write emails and messages about site related issues
- GS4.** read warnings, instructions and other text material on product labels, components as well as the manuals
- GS5.** read and correctly interpret organisation's information about working practices at the site
- GS6.** read product and module serial numbers and interpret details such as make, date and availability
- GS7.** receive and ask for clarifications from supervisor on the job requirement
- GS8.** describe site conditions and issues to co-workers and supervisor
- GS9.** communicate in local language
- GS10.** communicate to the management in meetings about site issues
- GS11.** interact with co-workers and gather information related to process and site conditions
- GS12.** educate on precautions to be taken in order to avoid recurrence of problem
- GS13.** take decisions pertaining to the installation
- GS14.** take pragmatic decisions to keep the project on track when issues arise in the work done by partners or vendors, without compromising the quality
- GS15.** execute the plan for the installation and detail its activities so that it can be finished on time
- GS16.** help the I&C Engineer in preparing the installation plan
- GS17.** maintain personal grooming
- GS18.** be polite, patient and courteous under all circumstances and with all types of customers
- GS19.** decide on the spot on whether interaction of customer with superior is necessary or not

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- GS20.** maintain proper etiquette including appropriate physical distance with customer during conversation, not entering bedroom without permission, etc.
- GS21.** put customer at ease and gain customer's confidence
- GS22.** identify needs of the customer and suggest most appropriate solution
- GS23.** support customers when needed
- GS24.** seek inputs to assess the problems
- GS25.** evaluate the possible solution(s) to a problem and suggest an optimum solution
- GS26.** use the existing information to arrive at course of actions
- GS27.** undertake and express new ideas and initiatives to others
- GS28.** analyse and evaluate the information gathered from observation, experience, reasoning or communication as a guide for thought and action
- GS29.** anticipate problems, risks and opportunities and utilise these for mitigation and business optimisation

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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Perform preparatory work</i>	14	18	-	4
PC1. obtain all relevant documents related to cabling, wiring, connected equipment as well as plant layout and interpret the same	1	3	-	-
PC2. follow the wire colour codes as specified in drawings	1	2	-	-
PC3. verify whether concealed conduits exist and find out their route in the premises by reading the layout drawing and by physical verification in case of following types of cables: low voltage power cable, CCTV cable, copper/fibre LAN cable	1	2	-	-
PC4. prepare a plan for laying cable on the wall, if concealed conduit does not exist	1	1	-	1
PC5. prepare a plan for route instrumentation cable	1	2	-	-
PC6. estimate the quantity and type of cables, conduits, tools, electrical parts, testing devices and accessories required as per the requirement of the job and obtain the same from authorised sources	2	2	-	1
PC7. enlist the required lengths of raceways, cable trays, and conduits for each section of cabling	1	2	-	-
PC8. identify the position where conduiting needs to be done by referring to layout drawings and specifications	2	1	-	1
PC9. make drill holes for mounting brackets etc. in the supporting structure, for mounting the making cable trays, etc.	2	2	-	-
PC10. select and use appropriate personal protective equipment (PPE) suitable for the type of work specified and in line with health and safety guidelines PPE should include mats, gloves, rubber footwear, etc.	2	1	-	1
<i>Lay conduits and pulling cables as per supplied drawings</i>	11	14	-	2

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. install raceways, cable trays and conduits as per procedure and drawings for the wires/cables	2	2	-	1
PC12. run the cables through the conduits and raceways, along with earth wires if specified, as per approved drawings and procedures while ensuring that different types of cables are not run in same conduit or trench; this is done to avoid cross talk	2	1	-	1
PC13. route the cables to respective junction boxes / panels using flexible hoses or other approved methods, leaving adequate length of cable for termination	2	2	-	-
PC14. follow appropriate procedures such that the cables are inserted through glands in the receiving enclosure and fix them properly	2	2	-	-
PC15. strip the sheath / outer covering / shield to suitable length and dress the cable as per approved standard operating procedures (SOP)	1	3	-	-
PC16. mark all individual wires using standard ferrules with tag numbers / identification as provided in the drawing for ease of identification	1	2	-	-
PC17. seal the conduit ends using approved material/device	1	2	-	-
<i>Perform termination and inter-connection for different types of cables</i>	15	18	-	4
PC18. route the stripped end of the cable through the internal cable trays/guides to the appropriate terminals	2	3	-	-
PC19. route the various cables, such as instrumentation cables, low voltage power cables and copper/fibre LAN cables, through the internal cable trays/guides to the appropriate device	2	2	-	1
PC20. route CCTV cables (power and video/IP) to target devices and terminate on appropriate connectors using the right tools (crimping / soldering / screw, etc.)	2	1	-	1

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC21. check and identify types of termination inside panels	1	2	-	-
PC22. use cable ties appropriately to tie the wires neatly	1	2	-	-
PC23. terminate cables on appropriate connectors using the right tools (crimping/soldering/screw, etc.) and plug the connectors to the devices, ensuring proper mating	2	1	-	1
PC24. check if the shield connection is made to the specific terminal and ensure that the shield is not grounded at both ends, as it causes ground loop which is harmful for the signal	1	2	-	-
PC25. verify the availability of shielded cable testing equipment	1	2	-	-
PC26. cross-check with wiring list and follow the recommended verification procedure	2	1	-	1
PC27. perform continuity check of wires	1	2	-	-
NOS Total	40	50	-	10

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National Occupational Standards (NOS) Parameters

NOS Code	IAS/N5609
NOS Name	Plan, lay and connect/terminate different types of cables
Sector	Instrumentation
Sub-Sector	Instrumentation & Automation
Occupation	Installation and Commissioning(Instrumentation and Automation)
NSQF Level	4
Credits	7
Version	2.0
Last Reviewed Date	NA
Next Review Date	11/08/2025
NSQC Clearance Date	11/08/2020

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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 customs / 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

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- 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

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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

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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Work as per the organisational team environment</i>	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
<i>Communicate effectively</i>	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	-	-
<i>Co-operate with team members and superiors</i>	8	18	-	1

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
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	-	-
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	-	-
<i>Respect customs / preferences and gender / ability differences</i>	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

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

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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

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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

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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

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- 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 accompanied 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

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- 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

Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Adhere to standard safety procedures of the company</i>	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
<i>Maintain good health and posture</i>	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	-	-
<i>Effective waste management/recycling practices</i>	4	5	-	1

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. identify recyclable and non-recyclable, and hazardous waste generated to be segregated accordingly	2	1	-	1
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	-	-
<i>Adopt learning and self-direction</i>	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	-	-
<i>Develop system thinking in problem solving</i>	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
<i>Material/Resources conservation practices</i>	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	-	-

Qualification Pack

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

Qualification Pack

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

Qualification Pack

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

Description

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

Scope

The scope covers the following :

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

Elements and Performance Criteria

Introduction to Employability Skills

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

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

Constitutional values - Citizenship

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

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

Becoming a Professional in the 21st Century

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

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

Basic English Skills

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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:

Qualification Pack

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:

Qualification Pack

- 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

Qualification Pack

Assessment Criteria

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

Qualification Pack

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

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC22. use basic features of word processor, spreadsheets, and presentations	-	-	-	-
<i>Entrepreneurship</i>	2	3	-	-
PC23. identify different types of Entrepreneurship and Enterprises and assess opportunities for potential business through research	-	-	-	-
PC24. develop a business plan and a work model, considering the 4Ps of Marketing Product, Price, Place and Promotion	-	-	-	-
PC25. identify sources of funding, anticipate, and mitigate any financial/ legal hurdles for the potential business opportunity	-	-	-	-
<i>Customer Service</i>	1	2	-	-
PC26. identify different types of customers	-	-	-	-
PC27. identify and respond to customer requests and needs in a professional manner.	-	-	-	-
PC28. follow appropriate hygiene and grooming standards	-	-	-	-
<i>Getting ready for apprenticeship & Jobs</i>	2	3	-	-
PC29. create a professional Curriculum vitae (Résumé)	-	-	-	-
PC30. search for suitable jobs using reliable offline and online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals, respectively	-	-	-	-
PC31. apply to identified job openings using offline /online methods as per requirement	-	-	-	-
PC32. answer questions politely, with clarity and confidence, during recruitment and selection	-	-	-	-
PC33. identify apprenticeship opportunities and register for it as per guidelines and requirements	-	-	-	-
NOS Total	20	30	-	-

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	DGT/VSQ/N0102
NOS Name	Employability Skills (60 Hours)
Sector	Cross Sectoral
Sub-Sector	Professional Skills
Occupation	Employability
NSQF Level	4
Credits	2
Version	1.0
Last Reviewed Date	NA
Next Review Date	30/12/2026
NSQC Clearance Date	30/12/2021

Assessment Guidelines and Assessment Weightage

Assessment Guidelines

1. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down a proportion of marks for Theory and Skills Practical for each PC.
2. The assessment for the theory part will be based on the knowledge bank of questions created by the SSC.
3. Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/option NOS/set of NOS.
4. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training centre (as per assessment criteria below).
5. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training centre based on this criterion.
6. To pass the Qualification Pack, every trainee should score a minimum of 70% of aggregate marks to successfully clear the assessment.

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

Minimum Aggregate Passing % at QP Level : 70

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

Assessment Weightage

Compulsory NOS

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
IAS/N5609.Plan, lay and connect/terminate different types of cables	40	50	-	10	100	65
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	-	-	50	15
Total	140	180	-	30	350	100

Qualification Pack

Acronyms

NOS	National Occupational Standard(s)
NSQF	National Skills Qualifications Framework
QP	Qualifications Pack
TVET	Technical and Vocational Education and Training
NOS	National Occupational Standard(S)
NSQF	National Skills Qualifications Framework
QP	Qualifications Pack
TVET	Technical And Vocational Education And Training
PM	Preventive Maintenance
SOP	Standard Operating Procedures
UUC	Unit Under Calibration
DM	Dimensional Metrology
RI	Reference Instrument
EA	Environmental Accommodation

Qualification Pack

Glossary

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

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