



Wireless Technician

QP Code: TEL/Q4105

Version: 2.0

NSQF Level: 4

Telecom Sector Skill Council || 3rd Floor, Plot No 126, Sector - 44
Gurgaon - 122003

Contents

TEL/Q4105: Wireless Technician	3
<i>Brief Job Description</i>	3
Applicable National Occupational Standards (NOS)	3
<i>Compulsory NOS</i>	3
<i>Qualification Pack (QP) Parameters</i>	3
TEL/N4122: Wiring and Installing Equipment at Different Sites	5
TEL/N4123: Configuring Equipment and Establishing Connectivity	10
TEL/N4124: Troubleshoot and rectify Faults	15
TEL/N4125: UPS Installation and Domestic Power Supply Checks	20
TEL/N9101: Organise Work and Resources as per Health and Safety Standards	24
TEL/N9102: Interact Effectively with Team Members and Customers	31
Assessment Guidelines and Weightage	35
<i>Assessment Guidelines</i>	35
<i>Assessment Weightage</i>	36
Acronyms	37
Glossary	38

TEL/Q4105: Wireless Technician

Brief Job Description

The individual in this job is responsible for installing, configuring and testing of Wi-Fi backhaul equipment (5 GHz) and Wi-Fi access points (2.4 GHz) for broadband access. They are also responsible for establishing connectivity in the backhaul between Wi-Fi nodes and access points at multiple sites and carrying out basic troubleshooting for identifying, localizing and rectifying cable, connectivity and equipment faults in coordination with Network Operation Centre (NOC).

Personal Attributes

This individual must have good communication skills with a clear diction, regional language proficiency, strong customer service focus and pleasant personality. They should be self-motivated, should be able to apply practical judgment to successfully perform the assigned responsibilities and possess qualities of a team player.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. [TEL/N4122: Wiring and Installing Equipment at Different Sites](#)
2. [TEL/N4123: Configuring Equipment and Establishing Connectivity](#)
3. [TEL/N4124: Troubleshoot and rectify Faults](#)
4. [TEL/N4125: UPS Installation and Domestic Power Supply Checks](#)
5. [TEL/N9101: Organise Work and Resources as per Health and Safety Standards](#)
6. [TEL/N9102: Interact Effectively with Team Members and Customers](#)

Qualification Pack (QP) Parameters

Sector	Telecom
Sub-Sector	Passive Infrastructure
Occupation	Operations and Maintenance - Passive Infrastructure
Country	India
NSQF Level	4

Aligned to NCO/ISCO/ISIC Code	NCO-2015/7422.0206
Minimum Educational Qualification & Experience	<p>12th Class OR 10th Class + I.T.I (2 years in Electronics/Telecom/IT and other relevant fields) OR Diploma (after Class 10th (2 years in Electronics/Telecom/IT and other relevant fields)) OR 10th Class with 2 Years of experience of relevant experience OR 8th Class (+ ITI (2 years in Electronics/Telecom/IT and other relevant fields)) with 2 Years of experience of relevant experience</p>
Minimum Level of Education for Training in School	Not Applicable
Pre-Requisite License or Training	NA
Minimum Job Entry Age	17 Years
Last Reviewed On	21/01/2021
Next Review Date	21/01/2026
NSQC Approval Date	12/04/2022
Version	2.0

TEL/N4122: Wiring and Installing Equipment at Different Sites

Description

This OS unit is about cable/system wiring and installation of Wi-Fi backhaul equipment (5 GHz) along with antenna at different sites as well as Wi-Fi access points (2.4 GHz) as per the surveyed plan. Cables include OFC, UTP/STP, Co-axial cable and feeder cable for connecting the Wi-Fi backhaul equipment (5 GHz) with antenna on mast tower.

Scope

The scope covers the following :

- Prepare and install the system
- Complete documentation and clean-up worksite

Elements and Performance Criteria

Prepare and install the system

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

- PC1.** interact with the superiors to understand the job requirements
- PC2.** plan access to sites for installation/testing activities as per the schedule
- PC3.** collect required tools, equipment and materials for a given work
- PC4.** match cable type including feeder cable and connectors to installation environment/site requirements as per the plan
- PC5.** check cable length for continuity
- PC6.** verify that the cable running length is free of electrical hazards and outdoors/indoors obstructions
- PC7.** liaise with local authorities especially for outdoor cabling
- PC8.** select suitable location for equipment installation at different site adhering to cabling norms and signal coverage
- PC9.** ensure structured wiring from PoP to different sites
- PC10.** install neat wiring and clipping at all points up to the equipment
- PC11.** use proper cable terminators/connectors
- PC12.** install proper feeder cable termination between equipment and antenna
- PC13.** test the cable/joints for transmission loss and strength, re-terminate if loss exceeds prescribed limits
- PC14.** install equipment following electrical safety principles and manufacturer's instructions
- PC15.** arrange proper earthing to power-up the system

Complete documentation and clean-up worksite

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

- PC16.** remove/dispose installation waste properly
- PC17.** restore worksite to customer satisfaction
- PC18.** update records with details of installation and test results
- PC19.** complete all installation documents and collect necessary payments if any

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** policies, standards and procedures to conduct lead generation activities
- KU2.** impact of not following defined procedures/work instructions issued as per guidelines
- KU3.** risk of working above the ground level on mast/towers
- KU4.** cabling types (OFC, UTP, STP, Twisted Pair etc.) and connectors (RJ-45, RJ- 11 etc.) as well as feeder cable and connectors
- KU5.** reasons of compliance/technical issues in Customer Enrolment Forms (CEFs)
- KU6.** structured cabling norms (pertaining to laying the cables)
- KU7.** process of cable laying, feeder cable laying and connectorisation
- KU8.** escalation matrix for reporting identified incidents, troubles and/ or emergencies e.g. system failures, fire and power failures
- KU9.** safety norms to be followed when climbing mast/tower
- KU10.** process of obtaining cables/equipment from company and keeping them in safe conditions at sites
- KU11.** formats for filling technical forms/activity logs
- KU12.** payment options and procedures

Generic Skills (GS)

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

- GS1.** write records as per given format
- GS2.** read and understand manuals, work orders, health and safety instructions, memos, reports etc
- GS3.** interact respectfully with supervisor/peers
- GS4.** communicate in the local language with the customers
- GS5.** work efficiently and effectively
- GS6.** work systematically with required attention to detail and adherence to all safety requirements
- GS7.** maintain proper etiquette in front of the customers

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Prepare and install the system</i>	23	44	-	7
PC1. interact with the superiors to understand the job requirements	-	1	-	-
PC2. plan access to sites for installation/testing activities as per the schedule	1	2	-	-
PC3. collect required tools, equipment and materials for a given work	1	2	-	1
PC4. match cable type including feeder cable and connectors to installation environment/site requirements as per the plan	1	2	-	1
PC5. check cable length for continuity	1	2	-	1
PC6. verify that the cable running length is free of electrical hazards and outdoors/indoors obstructions	2	3	-	-
PC7. liaise with local authorities especially for outdoor cabling	2	3	-	1
PC8. select suitable location for equipment installation at different site adhering to cabling norms and signal coverage	2	3	-	-
PC9. ensure structured wiring from PoP to different sites	2	3	-	1
PC10. install neat wiring and clipping at all points up to the equipment	2	3	-	-
PC11. use proper cable terminators/connectors	2	4	-	-
PC12. install proper feeder cable termination between equipment and antenna	2	4	-	1
PC13. test the cable/joints for transmission loss and strength, re-terminate if loss exceeds prescribed limits	2	4	-	1
PC14. install equipment following electrical safety principles and manufacturer's instructions	2	4	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC15. arrange proper earthing to power-up the system	1	4	-	-
<i>Complete documentation and clean-up worksite</i>	7	16	-	3
PC16. remove/dispose installation waste properly	2	4	-	1
PC17. restore worksite to customer satisfaction	1	4	-	1
PC18. update records with details of installation and test results	2	4	-	-
PC19. complete all installation documents and collect necessary payments if any	2	4	-	1
NOS Total	30	60	-	10

National Occupational Standards (NOS) Parameters

NOS Code	TEL/N4122
NOS Name	Wiring and Installing Equipment at Different Sites
Sector	Telecom
Sub-Sector	Passive Infrastructure
Occupation	Operations and Maintenance - Passive Infrastructure
NSQF Level	4
Credits	TBD
Version	2.0
Next Review Date	NA

TEL/N4123: Configuring Equipment and Establishing Connectivity

Description

This OS unit is about configuring of Wi-Fi backhaul equipment (5 GHz), Wi-Fi access points (2.4 GHz) and establishing broadband connectivity between two ends and service provider gateway and between the Wi-Fi backhaul equipment and access points.

Scope

The scope covers the following :

- Configuration of equipment
- Establish connectivity
- Record configuration setting and testing steps

Elements and Performance Criteria

Configuration of equipment

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

- PC1.** connect feeder cable with antenna at different sites and measure VSWR/return loss
- PC2.** connect Wi-Fi backhaul equipment with feeder cable to check antenna orientation for surveyed receive levels
- PC3.** connect Wi-Fi backhaul equipment with Wi-Fi access points
- PC4.** connect laptop/PC, and other appropriate device to the interface equipment at Wi-Fi backhaul equipment and establish connectivity with Wi-Fi access points
- PC5.** access setting using default login credentials
- PC6.** configure equipment as per the base setting (IP, Gateway, Mask etc.)

Establish connectivity with the service provider gateway

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

- PC7.** ensure all cables/connectors are correctly plugged in
- PC8.** apply steps to ping service provider gateway
- PC9.** analyze test results for connectivity and throughout parameters
- PC10.** configure end user device to establish connectivity with the Wi-Fi access point
- PC11.** use commands and processes to ping the Wi-Fi access point from the end user device and analyze the response of the command/process

Record configuration setting and testing steps

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

- PC12.** record Wi-Fi access equipment (2.4 GHz and 5GHz) configuration settings and test results at all sites
- PC13.** record end user device configuration setting
- PC14.** record pinging procedure and expected result parameters
- PC15.** brief customer on basic troubleshooting steps/self-help

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** basic concepts of wireless technologies including Wi-Fi conforming to IEEE 802.11 standards, antennas, feeder cables, Wi-Fi access points
- KU2.** risk and impact of not following defined procedures/work instructions as per guidelines
- KU3.** network topologies, broadband network elements, Gateways, TCP/IP, IP address, subnet masks, Ethernet address, MAC address, IPv4, IPv6
- KU4.** basic commands like ping and IP configuration and acceptable round-trip time for IP packets
- KU5.** configuration settings at Wi-Fi equipment and Wi-Fi access points
- KU6.** sourcing equipment and base configuration details
- KU7.** first aid requirements in case of electrical shocks, cuts, fall and other common injuries
- KU8.** command line access and command prompts to execute basic commands
- KU9.** functioning of customer premise equipment
- KU10.** features and operating requirements of test equipment
- KU11.** how to test the speed of connection and to demonstrate same to customer

Generic Skills (GS)

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

- GS1.** read and comprehend technical data on networks, configurations and testing
- GS2.** interact respectfully with supervisor/peers
- GS3.** communicate in the local language with the customers
- GS4.** maintain proper etiquette in front of the customers
- GS5.** work efficiently and effectively
- GS6.** work systematically with required attention to detail and adherence to all safety requirements

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Configuration of equipment</i>	13	26	-	3
PC1. connect feeder cable with antenna at different sites and measure VSWR/return loss	1	5	-	-
PC2. connect Wi-Fi backhaul equipment with feeder cable to check antenna orientation for surveyed receive levels	1	5	-	-
PC3. connect Wi-Fi backhaul equipment with Wi-Fi access points	2	4	-	-
PC4. connect laptop/PC, and other appropriate device to the interface equipment at Wi-Fi backhaul equipment and establish connectivity with Wi-Fi access points	3	2	-	1
PC5. access setting using default login credentials	3	5	-	1
PC6. configure equipment as per the base setting (IP, Gateway, Mask etc.)	3	5	-	1
<i>Establish connectivity with the service provider gateway</i>	9	20	-	4
PC7. ensure all cables/connectors are correctly plugged in	2	5	-	1
PC8. apply steps to ping service provider gateway	2	5	-	1
PC9. analyze test results for connectivity and throughput parameters	1	4	-	-
PC10. configure end user device to establish connectivity with the Wi-Fi access point	2	3	-	1
PC11. use commands and processes to ping the Wi-Fi access point from the end user device and analyze the response of the command/process	2	3	-	1
<i>Record configuration setting and testing steps</i>	8	14	-	3
PC12. record Wi-Fi access equipment (2.4 GHz and 5GHz) configuration settings and test results at all sites	4	7	-	1

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. record end user device configuration setting	2	3	-	1
PC14. record pinging procedure and expected result parameters	1	2	-	-
PC15. brief customer on basic troubleshooting steps/self-help	1	2	-	1
NOS Total	30	60	-	10

National Occupational Standards (NOS) Parameters

NOS Code	TEL/N4123
NOS Name	Configuring Equipment and Establishing Connectivity
Sector	Telecom
Sub-Sector	Passive Infrastructure
Occupation	Operations and Maintenance - Passive Infrastructure
NSQF Level	4
Credits	TBD
Version	2.0
Next Review Date	NA

TEL/N4124: Troubleshoot and rectify Faults

Description

This OS unit is about performing corrective maintenance, troubleshooting and testing effectiveness.

Scope

The scope covers the following :

- Troubleshoot wiring faults
- Troubleshoot Wi-Fi backhaul equipment (5 GHz)
- Troubleshoot Wi-Fi access points (2.4 GHz)
- Complete documentation and clean-up worksite

Elements and Performance Criteria

Troubleshoot wiring faults

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

- PC1.** differentiate between various types of cables
- PC2.** identify correct cable pairs
- PC3.** undertake continuity check and localize fault distance
- PC4.** carry out re-connectorization/crimping (of cable pairs with connector) or replace cable, if required
- PC5.** replace feeder cable/antenna, if required
- PC6.** re-configure the Wi-Fi backhaul equipment to correct settings at service provider gateway/end user devices, if required
- PC7.** reset Wi-Fi access points, if required

Troubleshoot Wi-Fi backhaul equipment (5 GHz)

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

- PC8.** identify relevance of various indicative lights on the Wi-Fi backhaul equipment
- PC9.** connect handheld network tester portable device for fault diagnostic
- PC10.** connect cable and antenna tester, if required
- PC11.** check for antenna orientation, if required
- PC12.** obtain results to localize fault

Troubleshoot Wi-Fi access points (2.4 GHz)

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

- PC13.** identify relevance of various indicative lights on the Wi-Fi access point equipment
- PC14.** connect handheld network tester portable device for fault diagnostic
- PC15.** analyse output of trouble shooting equipment/device
- PC16.** access Wi-Fi access point through browser/software application to run diagnostic application

Complete documentation and clean-up worksite

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

- PC17.** record steps undertaken for fault localization/isolation

PC18. record changes undertaken for fault rectification

PC19. restore any changes made to the worksite during fault repair to the client satisfaction

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. proper cables and cable pairs, feeder cable

KU2. cable connectors, feeder cable connectors

KU3. crimping/soldering process and equipment

KU4. sourcing equipment and base configuration details

KU5. supported cable lengths to achieve designed throughput

KU6. EMI/EMC concepts and preventive approach specific to modem

KU7. appropriate commands to reconfigure/rectify fault

KU8. how to use appropriate tools for fault rectification

KU9. functioning of test equipment such as network tester, cable and antenna tester etc

KU10. functioning of laptop or other specific portable to carryout fault diagnostics and repairs

KU11. risk and impact of not following defined procedures/work instructions

KU12. escalation matrix for reporting identified incidents, troubles and/ or emergencies e.g. system failures, fire and power failures

KU13. first aid requirements in case of electrical shocks, cuts, fall and other common injuries usage of fire safety equipment

Generic Skills (GS)

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

GS1. document status and other information in records as per given format

GS2. read and comprehend technical manual and literature

GS3. work orders, health and safety instructions, memos, reports etc

GS4. communicate with supervisor and fellow technicians

GS5. communicate in the local language with the customers

GS6. maintain proper etiquettes in front of the customers

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Troubleshoot wiring faults</i>	15	15	-	4
PC1. differentiate between various types of cables	1	1	-	-
PC2. identify correct cable pairs	1	1	-	-
PC3. undertake continuity check and localize fault distance	1	1	-	-
PC4. carry out re-connectorization/crimping (of cable pairs with connector) or replace cable, if required	3	3	-	1
PC5. replace feeder cable/antenna, if required	3	3	-	1
PC6. re-configure the Wi-Fi backhaul equipment to correct settings at service provider gateway/end user devices, if required	2	4	-	1
PC7. reset Wi-Fi access points, if required	4	2	-	1
<i>Troubleshoot Wi-Fi backhaul equipment (5 GHz)</i>	10	16	-	4
PC8. identify relevance of various indicative lights on the Wi-Fi backhaul equipment	2	2	-	1
PC9. connect handheld network tester portable device for fault diagnostic	4	4	-	1
PC10. connect cable and antenna tester, if required	2	4	-	-
PC11. check for antenna orientation, if required	1	2	-	1
PC12. obtain results to localize fault	1	4	-	1
<i>Troubleshoot Wi-Fi access points (2.4 GHz)</i>	9	12	-	-
PC13. identify relevance of various indicative lights on the Wi-Fi access point equipment	2	2	-	-
PC14. connect handheld network tester portable device for fault diagnostic	2	4	-	-
PC15. analyse output of trouble shooting equipment/device	2	2	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC16. access Wi-Fi access point through browser/software application to run diagnostic application	3	4	-	-
<i>Complete documentation and clean-up worksite</i>	6	7	-	2
PC17. record steps undertaken for fault localization/isolation	2	2	-	1
PC18. record changes undertaken for fault rectification	2	2	-	-
PC19. restore any changes made to the worksite during fault repair to the client satisfaction	2	3	-	1
NOS Total	40	50	-	10

National Occupational Standards (NOS) Parameters

NOS Code	TEL/N4124
NOS Name	Troubleshoot and rectify Faults
Sector	Telecom
Sub-Sector	Passive Infrastructure
Occupation	Operations and Maintenance - Passive Infrastructure
NSQF Level	4
Credits	TBD
Version	2.0
Next Review Date	NA

TEL/N4125: UPS Installation and Domestic Power Supply Checks

Description

This OS unit is about undertaking power supply checks and UPS installation at service provider/customer premise

Scope

The scope covers the following :

- Install UPS and check the electrical parameters

Elements and Performance Criteria

Install UPS and check electrical parameters

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

- PC1.** perform checks for voltage, current and earthing
- PC2.** plan installation activities
- PC3.** analyse basic wiring diagrams to facilitate correct installation of UPS
- PC4.** install UPS as per manufacturer's instructions
- PC5.** route the power supply through UPS
- PC6.** calculate equipment load vis-à-vis UPS rating
- PC7.** exercise precautions while handling power supplies
- PC8.** perform checks to replace the battery in case of a defective UPS

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** voltage/current norms
- KU2.** norms for checking earthing and continuity of power supply
- KU3.** UPS installation norms
- KU4.** types of UPS
- KU5.** power rating of UPS
- KU6.** functioning of test equipment for checking/measuring power supply
- KU7.** types of batteries compatible with UPS

Generic Skills (GS)

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

- GS1.** maintain proper records as per given format
- GS2.** read and comprehend technical manual and literature
- GS3.** read and understand work orders, health and safety instructions, memos, reports etc

- GS4.** communicate with supervisor and fellow technicians
- GS5.** communicate in the local language with the customers
- GS6.** maintain proper etiquette in front of the customers
- GS7.** work with minimum disturbance

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Install UPS and check electrical parameters</i>	30	60	-	10
PC1. perform checks for voltage, current and earthing	4	8	-	2
PC2. plan installation activities	4	7	-	1
PC3. analyse basic wiring diagrams to facilitate correct installation of UPS	4	9	-	2
PC4. install UPS as per manufacturer's instructions	3	8	-	1
PC5. route the power supply through UPS	4	7	-	1
PC6. calculate equipment load vis-à-vis UPS rating	3	7	-	1
PC7. exercise precautions while handling power supplies	4	7	-	1
PC8. perform checks to replace the battery in case of a defective UPS	4	7	-	1
NOS Total	30	60	-	10

National Occupational Standards (NOS) Parameters

NOS Code	TEL/N4125
NOS Name	UPS Installation and Domestic Power Supply Checks
Sector	Telecom
Sub-Sector	Passive Infrastructure
Occupation	Operations and Maintenance - Passive Infrastructure
NSQF Level	4
Credits	TBD
Version	2.0
Next Review Date	NA

TEL/N9101: Organise Work and Resources as per Health and Safety Standards

Description

This OS unit is about planning work and following sustainable as well as healthy practices for safety and optimal use of resources.

Scope

The scope covers the following :

- Perform work as per quality standards
- Maintain safe, healthy and secure working environment
- Conserve material/energy/electricity
- Use effective waste management/recycling practices

Elements and Performance Criteria

Perform work as per quality standards

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

- PC1.** keep workspace clean and tidy
- PC2.** perform individual role and responsibilities as per the job role while taking accountability for the work
- PC3.** record/document tasks completed as per the requirements within specific timelines
- PC4.** implement schedules to ensure timely completion of tasks
- PC5.** identify the cause of a problem related to own work and validate it
- PC6.** analyse problems accurately and communicate different possible solutions to the problem

Maintain safe, healthy and secure working environment

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

- PC7.** comply with organisation's current health, safety, security policies and procedures
- PC8.** check for water spills in and around the work space and escalate these to the appropriate authority
- PC9.** report any identified breaches in health, safety, and security policies and procedures to the designated person
- PC10.** use safety materials such as goggles, gloves, ear plugs, caps, ESD pins, covers, shoes, etc.
- PC11.** avoid damage of components due to negligence in ESD procedures or any other loss due to safety negligence
- PC12.** identify hazards such as illness, accidents, fires or any other natural calamity safely, as per organisation's emergency procedures, within the limits of individual's authority
- PC13.** participate regularly in fire drills or other safety related workshops organised by the company
- PC14.** report any hazard outside the individual's authority to the relevant person in line with organisational procedures and warn others who may be affected
- PC15.** maintain appropriate posture while sitting/standing for long hours

- PC16.** handle heavy and hazardous materials with care, while maintaining appropriate posture
- PC17.** sanitize workstation and equipment regularly
- PC18.** clean hands with soap, alcohol-based sanitizer regularly
- PC19.** avoid contact with anyone suffering from communicable diseases and take necessary precautions
- PC20.** take safety precautions while travelling e.g. maintain 1m distance from others, sanitize hands regularly, wear masks, etc.
- PC21.** report hygiene and sanitation issues to appropriate authority
- PC22.** follow recommended personal hygiene and sanitation practices, for example, washing/sanitizing hands, covering face with a bent elbow while coughing/sneezing, using PPE, etc.

Conserve material/energy/electricity

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

- PC23.** optimize usage of material including water in various tasks/activities/processes
- PC24.** use resources such as water, electricity and others responsibly
- PC25.** carry out routine cleaning of tools, machine and equipment
- PC26.** optimize use of electricity/energy in various tasks/activities/processes
- PC27.** perform periodic checks of the functioning of the equipment/machine and rectify wherever required
- PC28.** report malfunctioning and lapses in maintenance of equipment
- PC29.** use electrical equipment and appliances properly

Use effective waste management/recycling practices

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

- PC30.** identify recyclable, non-recyclable and hazardous waste
- PC31.** deposit recyclable and reusable material at identified location
- PC32.** dispose non-recyclable and hazardous waste as per recommended processes

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** 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
- KU2.** key performance indicators for the new tasks
- KU3.** feedback processes and formats
- KU4.** timelines and goals as well as their relevance to work allocated
- KU5.** importance of quality and timely delivery of the product/service
- KU6.** escalation matrix and its importance, especially in case of emergencies
- KU7.** ways of time and cost management
- KU8.** rules/regulation for maintaining health and safety at workplace
- KU9.** meaning of hazard, different types of health and safety hazards found in the workplace, risks and threats based on the nature of work

- KU10.** relevant signage, warnings, labels or descriptions on equipment, etc. while carrying out work activities
- KU11.** procedures to report breaches in health, safety and security
- KU12.** organisation's procedures for different emergency situations and the importance of following the same
- KU13.** different methods of cleaning, disinfection, sterilization, and sanitization
- KU14.** significance of personal hygiene practice including hand hygiene
- KU15.** path of disease transmission
- KU16.** correct method of donning and doffing of PPE
- KU17.** ways of managing resources and material efficiently
- KU18.** common electrical problems and common practices of conserving electricity
- KU19.** categorization of waste into dry, wet, recyclable, non-recyclable and items of single-use plastics and use of different colours of dustbins
- KU20.** organisation's procedures for minimizing waste
- KU21.** waste management and methods of waste disposal
- KU22.** common sources of pollution and ways to minimize it

Generic Skills (GS)

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

- GS1.** improve and modify work practices
- GS2.** complete tasks efficiently and accurately within stipulated time
- GS3.** develop skills and mastery of the technologies prevalent in the industry
- GS4.** write in at least one language and complete written work with attention to detail
- GS5.** utilize time and manage workload efficiently
- GS6.** read and comprehend instructions and documents
- GS7.** accept feedback in a constructive way
- GS8.** seek clarifications from superior about the job requirement
- GS9.** read and comprehend statutory documents relevant to safety and hygiene
- GS10.** refer all anomalies to the concerned persons
- GS11.** analyze situations and make appropriate decisions
- GS12.** decide the most suitable course of action for completing the task within resources

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Perform work as per quality standards</i>	4	9	-	2
PC1. keep workspace clean and tidy	-	1	-	-
PC2. perform individual role and responsibilities as per the job role while taking accountability for the work	1	1	-	1
PC3. record/document tasks completed as per the requirements within specific timelines	-	1	-	1
PC4. implement schedules to ensure timely completion of tasks	-	2	-	-
PC5. identify the cause of a problem related to own work and validate it	2	2	-	-
PC6. analyse problems accurately and communicate different possible solutions to the problem	1	2	-	-
<i>Maintain safe, healthy and secure working environment</i>	16	27	-	4
PC7. comply with organisation's current health, safety, security policies and procedures	1	1	-	-
PC8. check for water spills in and around the work space and escalate these to the appropriate authority	1	2	-	1
PC9. report any identified breaches in health, safety, and security policies and procedures to the designated person	1	2	-	1
PC10. use safety materials such as goggles, gloves, ear plugs, caps, ESD pins, covers, shoes, etc.	1	2	-	1
PC11. avoid damage of components due to negligence in ESD procedures or any other loss due to safety negligence	2	3	-	1
PC12. identify hazards such as illness, accidents, fires or any other natural calamity safely, as per organisation's emergency procedures, within the limits of individual's authority	2	1	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. participate regularly in fire drills or other safety related workshops organised by the company	1	3	-	-
PC14. report any hazard outside the individual's authority to the relevant person in line with organisational procedures and warn others who may be affected	1	3	-	-
PC15. maintain appropriate posture while sitting/standing for long hours	1	1	-	-
PC16. handle heavy and hazardous materials with care, while maintaining appropriate posture	1	1	-	-
PC17. sanitize workstation and equipment regularly	1	2	-	-
PC18. clean hands with soap, alcohol-based sanitizer regularly	-	1	-	-
PC19. avoid contact with anyone suffering from communicable diseases and take necessary precautions	-	1	-	-
PC20. take safety precautions while travelling e.g. maintain 1m distance from others, sanitize hands regularly, wear masks, etc.	1	2	-	-
PC21. report hygiene and sanitation issues to appropriate authority	1	1	-	-
PC22. follow recommended personal hygiene and sanitation practices, for example, washing/sanitizing hands, covering face with a bent elbow while coughing/sneezing, using PPE, etc.	1	1	-	-
<i>Conserve material/energy/electricity</i>	7	16	-	3
PC23. optimize usage of material including water in various tasks/activities/processes	1	2	-	-
PC24. use resources such as water, electricity and others responsibly	1	2	-	1
PC25. carry out routine cleaning of tools, machine and equipment	1	2	-	-
PC26. optimize use of electricity/energy in various tasks/activities/processes	1	3	-	1

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC27. perform periodic checks of the functioning of the equipment/machine and rectify wherever required	1	3	-	1
PC28. report malfunctioning and lapses in maintenance of equipment	1	2	-	-
PC29. use electrical equipment and appliances properly	1	2	-	-
<i>Use effective waste management/recycling practices</i>	3	8	-	1
PC30. identify recyclable, non-recyclable and hazardous waste	1	2	-	1
PC31. deposit recyclable and reusable material at identified location	1	3	-	-
PC32. dispose non-recyclable and hazardous waste as per recommended processes	1	3	-	-
NOS Total	30	60	-	10

National Occupational Standards (NOS) Parameters

NOS Code	TEL/N9101
NOS Name	Organise Work and Resources as per Health and Safety Standards
Sector	Telecom
Sub-Sector	Generic
Occupation	Generic
NSQF Level	4
Credits	TBD
Version	1.0
Last Reviewed Date	24/02/2022
Next Review Date	24/02/2026
NSQC Clearance Date	24/02/2022

TEL/N9102: Interact Effectively with Team Members and Customers

Description

This OS unit is about interacting with superiors and colleagues as well as customers and other stakeholders in own or other work groups within as well as outside the organisation.

Scope

The scope covers the following :

- Interact effectively with superiors
- Interact effectively with colleagues and customers
- Respect differences of gender and ability

Elements and Performance Criteria

Interact effectively with superiors

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

- PC1.** receive work requirements from superiors and customers and interpret them correctly
- PC2.** inform the supervisor and/or concerned person about any unforeseen disruptions or delays
- PC3.** participate in decision making by providing facts and figures, giving/accepting constructive suggestions
- PC4.** rectify errors as per feedback and ensure the errors are not repeated

Interact effectively with colleagues and customers

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

- PC5.** comply with organisation's policies and procedures for working with team members
- PC6.** communicate professionally using appropriate mode of communication such as face-to-face, telephonic and written
- PC7.** respond to queries and seek/provide clarifications if required
- PC8.** co-ordinate with team to integrate work as per requirements
- PC9.** resolve conflicts within the team/with customers to achieve smooth workflow
- PC10.** recognize emotions accurately in self and others to build good relationships
- PC11.** prioritize team and organization goals above personal goals

Respect differences of gender and ability

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

- PC12.** maintain a conducive environment for all the genders at the workplace
- PC13.** encourage appropriate behavior and conduct with people across gender
- PC14.** assist team members with disability in overcoming any challenges faced in work
- PC15.** practice appropriate verbal and non-verbal communication while interacting with People with Disability (PwD)
- PC16.** ensure equal participation of the people across genders in discussions

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** organisation's policies on dress code, workplace timings, workplace behaviour, performance management, incentives, delivery standards, information security, etc.
- KU2.** organisation's hierarchy and escalation matrix
- KU3.** importance of establishing good working relationships with colleagues and superiors
- KU4.** importance of helping colleagues with problems, in order to meet quality and time standards as a team
- KU5.** different means and methods of communication
- KU6.** different types of information that colleagues might need and the importance of providing this information in an appropriate manner
- KU7.** organisation's policies and procedures for working with colleagues and superiors
- KU8.** importance of understanding consequences of gender biased behaviour
- KU9.** gender based concepts, issues and legislation
- KU10.** 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
- KU11.** health and safety requirements at workplace for PwD
- KU12.** process of recruiting people for a particular job profile w.r.t PwD and gender
- KU13.** various government/private schemes and benefits available for PwD and information about various institutes working for PwD to enable in providing livelihood opportunities for PwD

Generic Skills (GS)

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

- GS1.** read and comprehend forms, documents and records
- GS2.** read and write in English and/or local language
- GS3.** complete work with attention to detail
- GS4.** listen effectively and orally communicate information
- GS5.** work as per customer requirements
- GS6.** communicate with empathy across genders and PwD
- GS7.** improve and modify work practices
- GS8.** maintain positive and effective relationships with colleagues and customers
- GS9.** evaluate the possible solution(s) to the problem

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Interact effectively with superiors</i>	7	15	-	2
PC1. receive work requirements from superiors and customers and interpret them correctly	1	2	-	-
PC2. inform the supervisor and/or concerned person about any unforeseen disruptions or delays	2	4	-	1
PC3. participate in decision making by providing facts and figures, giving/accepting constructive suggestions	2	5	-	1
PC4. rectify errors as per feedback and ensure the errors are not repeated	2	4	-	-
<i>Interact effectively with colleagues and customers</i>	7	26	-	4
PC5. comply with organisation's policies and procedures for working with team members	1	2	-	-
PC6. communicate professionally using appropriate mode of communication such as face-to-face, telephonic and written	2	4	-	1
PC7. respond to queries and seek/provide clarifications if required	2	4	-	1
PC8. co-ordinate with team to integrate work as per requirements	-	3	-	-
PC9. resolve conflicts within the team/with customers to achieve smooth workflow	1	5	-	1
PC10. recognize emotions accurately in self and others to build good relationships	1	4	-	-
PC11. prioritize team and organization goals above personal goals	-	4	-	1
<i>Respect differences of gender and ability</i>	11	24	-	4
PC12. maintain a conducive environment for all the genders at the workplace	2	5	-	1
PC13. encourage appropriate behavior and conduct with people across gender	2	5	-	1

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC14. assist team members with disability in overcoming any challenges faced in work	3	4	-	1
PC15. practice appropriate verbal and non-verbal communication while interacting with People with Disability (PwD)	2	4	-	1
PC16. ensure equal participation of the people across genders in discussions	2	6	-	-
NOS Total	25	65	-	10

National Occupational Standards (NOS) Parameters

NOS Code	TEL/N9102
NOS Name	Interact Effectively with Team Members and Customers
Sector	Telecom
Sub-Sector	Generic
Occupation	Generic
NSQF Level	4
Credits	TBD
Version	1.0
Last Reviewed Date	24/02/2022
Next Review Date	24/02/2026
NSQC Clearance Date	24/02/2022

Assessment Guidelines and Assessment Weightage

Assessment Guidelines

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Element/Performance Criteria (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 Element/PC.
2. The assessment for the theory part will be based on 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 center (as per assessment criteria below).
5. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/ training center based on these criteria.
6. To pass the Qualification Pack assessment, every trainee should score the Recommended Pass % aggregate for the QP.
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
TEL/N4122.Wiring and Installing Equipment at Different Sites	30	60	0	10	100	20
TEL/N4123.Configuring Equipment and Establishing Connectivity	30	60	0	10	100	20
TEL/N4124.Troubleshoot and rectify Faults	40	50	0	10	100	20
TEL/N4125.UPS Installation and Domestic Power Supply Checks	30	60	0	10	100	20
TEL/N9101.Organise Work and Resources as per Health and Safety Standards	30	60	-	10	100	10
TEL/N9102.Interact Effectively with Team Members and Customers	25	65	-	10	100	10
Total	185	355	-	60	600	100

Acronyms

NOS	National Occupational Standard(s)
NSQF	National Skills Qualifications Framework
QP	Qualifications Pack
TVET	Technical and Vocational Education and Training
OFC	Optical Fiber Cable
UTP	Un-shielded Twisted pair
STP	Shielded Twisted Pair
PoP	Point of Presence
TCP	Transmission Control Protocol
IP	Internet Protocol
IPv4	Internet Protocol version 4
IPv6	Internet Protocol version 6

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.
Sector	Sector is a conglomeration of different business operations having similar businesses 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.
Function	Function is an activity necessary for achieving the key purpose of the sector, occupation, or area of work, which can be carried out by a person or a group of persons. Functions are identified through functional analysis and form the basis of OS.
Job Role	Job role defines a unique set of functions that together form a unique employment opportunity in an organization.
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 they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria	Performance Criteria are statements that together specify the standard of performance required when carrying out a task.
NOS	NOS are Occupational Standards which apply uniquely in the Indian context.

Qualifications Pack Code	Qualifications Pack Code is a unique reference code that identifies a qualifications pack.
Qualifications Pack	Qualifications Pack comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A qualifications Pack is assigned a unique qualification pack code.
Unit Code	Unit Code is a unique identifier for an Occupational Standard, which is denoted by an "OS"™.
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.
Knowledge and Understanding	Knowledge and Understanding are statements which together specify the technical, generic, professional and organizational specific knowledge that an individual needs in order to perform to the required standard.
Organizational Context	Organizational Context includes the way the organization 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 or Generic Skills	Core Skills or Generic Skills are a group of skills that are key to learning and working 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.