









Drive Test Engineer

QP Code: TEL/Q6211

Version: 4.0

NSQF Level: 5

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









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TEL/Q6211: Drive Test Engineer

Brief Job Description

An individual in this job role is responsible for checking the network performance of the cell site by measuring the parameters using fixed/ portable test/ measuring equipment. They are expected to record and analyse the measured data, which can be further used for improving the cell site performance.

Personal Attributes

This job requires a person who is having willingness of doing field job and having good patience level, dedicated towards goal, technically qualified, team player, action oriented. He should be able to analyze, interpret data and apply professional judgement to carry out assigned responsibilities.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

- 1. TEL/N6237: Tower Site Verification and Preparation for Drive Test
- 2. TEL/N6238: Tower Site Performance Measurement and Parameter Recording
- 3. <u>TEL/N6239</u>: Tower Site Data Analysis and Reporting
- 4. TEL/N6240: Tower Site Optimization and Troubleshooting
- 5. TEL/N9103: Implement Effective Interaction at workplace
- 6. TEL/N9104: Manage Work, Resources and Safety at workplace
- 7. DGT/VSQ/N0102: Employability Skills (60 Hours)

Qualification Pack (QP) Parameters

Sector	Telecom
Sub-Sector	Network Managed Services
Occupation	Network Operation and Maintenance
Country	India
NSQF Level	5









Credits	22
Aligned to NCO/ISCO/ISIC Code	NCO-2015/7422.3003
Minimum Educational Qualification & Experience	Completed 2nd year of UG (UG Diploma) (Completed 2nd year of 3-year/ 4-years UG) OR Pursuing 2nd year of UG (of 3-year/ 4-years UG and continuing education) OR Completed 2nd year diploma after 12th OR Pursuing 2nd year of 2-year diploma after 12th (with no experience required) OR 12th grade Pass (with 2 year of any combination of NTC/NAC/CITS or equivalent with no experience) OR Completed 3 year diploma after 10th OR 12th grade pass with 1 year NTC/ NAC OR Completed 1st year of UG (UG Certificate) (of 3-year/4-years UG with 1 year relevant experience) OR Previous relevant Qualification of NSQF Level (4) with 3 Years of experience
Minimum Level of Education for Training in School	
Pre-Requisite License or Training	NA
Minimum Job Entry Age	21 Years
Last Reviewed On	NA
Next Review Date	24/02/2025
NSQC Approval Date	24/02/2022
Version	4.0
Reference code on NQR	QG-05-TL-00458-2023-V1.1-TSSC
NQR Version	1.1









TEL/N6237: Tower Site Verification and Preparation for Drive Test

Description

This OS unit is about the verification and preparation of the tower site and associated tools/ equipment for performing the drive test.

Scope

The scope covers the following:

- Verify site and related parameters
- Arrange tools and equipment required for performing site audit and drive test

Elements and Performance Criteria

Verify site and related parameters

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

- PC1. verify tower ID (all three sectors) and latitude & longitude of the site
- **PC2.** ascertain antenna height, antenna tilt (E/M) and antenna orientation of the site as per the given parameters
- **PC3.** ascertain sector swap as per the defined parameters
- **PC4.** perform EMF survey as per the company norms

Arrange the tools and equipment required for performing site audit and drive test

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

- **PC5.** ascertain availability of all test and measuring equipment (magnetic compass,hand GPS, tilt meter, digital camera, safety kit and measuring tape)
- **PC6.** ascertain availability of all tools for performing drive test (laptop, charger,portable charges, data cables, TEMS dongle, mobile phone
- **PC7.** ascertain availability and proper installation/ configuration of drive test measurement and recording software (TEMS, MAPINFO, MCOM)

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- **KU1.** risk and impact of not following defined procedures/ work instructions
- **KU2.** records to be maintained and implications of non-maintenance of the same
- **KU3.** importance of record keeping
- **KU4.** spare management and repair and return process for faulty equipment
- **KU5.** Safety Health and Environment (SHE) and Occupational Health and Safety (OHS) guidelines and regulations as per company norms
- **KU6.** first aid requirements in case of electrical shocks, cuts, fall from height and other common injuries
- **KU7.** use of safety kit for climbing towers while optimizing the site









- **KU8.** use of fire extinguisher in the car should be mandatory
- **KU9.** functionality of tools like GPS, Magnetic compass, laptop, MapInfo software, MCOM software, PowerPoint software, Google earth
- **KU10.** principle of directional antennas, sectorization , tilting (E/M), frequency bands, GSM architecture
- **KU11.** types of telecom towers (GBT, RTT, Pole)
- **KU12.** AMT (Amplifier Mount Transceiver)
- KU13. passive infrastructure on site. (DG, PIU, SMPS, Tower, Cables, shelter etc.

Generic Skills (GS)

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

- **GS1.** read and interpret necessary documents
- **GS2.** read and understand manuals, requirement documents, operational health and safety instructions, memos, reports etc.
- **GS3.** read and comprehend/understand material specifications
- **GS4.** communicate with colleagues, peers and supervisor
- **GS5.** liaise and coordinate with third party vendors/other stakeholders









Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Verify site and related parameters	13	30	-	6
PC1. verify tower ID (all three sectors) and latitude & longitude of the site	3	5	-	2
PC2. ascertain antenna height, antenna tilt (E/M) and antenna orientation of the site as per the given parameters	3	10	-	2
PC3. ascertain sector swap as per the defined parameters	4	8	-	1
PC4. perform EMF survey as per the company norms	3	7	-	1
Arrange the tools andequipment requiredfor performing siteaudit and drive test	17	30	-	4
PC5. ascertain availability of all test and measuring equipment (magnetic compass,hand GPS, tilt meter, digital camera, safety kit and measuring tape)	6	10	-	2
PC6. ascertain availability of all tools for performing drive test (laptop, charger,portable charges, data cables, TEMS dongle, mobile phone	6	15	-	1
PC7. ascertain availability and proper installation/ configuration of drive test measurement and recording software (TEMS, MAPINFO, MCOM)	5	5	-	1
NOS Total	30	60	-	10









National Occupational Standards (NOS) Parameters

NOS Code	TEL/N6237
NOS Name	Tower Site Verification and Preparation for Drive Test
Sector	Telecom
Sub-Sector	Network Managed Services
Occupation	Network Operation and Maintenance
NSQF Level	5
Credits	4
Version	3.0
Last Reviewed Date	NA
Next Review Date	24/02/2025
NSQC Clearance Date	24/02/2022









TEL/N6238: Tower Site Performance Measurement and Parameter Recording

Description

This OS unit is about the on-site activities for measuring tower performance and recording parameters for analysis.

Scope

The scope covers the following:

- Plan area, routes and schedule to conduct drive test
- Onsite activity
- Fault identification and rectification

Elements and Performance Criteria

Plan area, routes and schedule for conducting drive test

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

- **PC1.** trace a given path on the google earth software, MapInfo software to identify the site location
- **PC2.** coordinate with the support team to schedule the drive test
- **PC3.** plan the drive test route
- **PC4.** check/rectify the fault, site alarm (if any) before initiating the drive test

On-site activity

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

- **PC5.** demonstrate test compliances (no swap in the sector, all neighboring cell parameters are defined and all Radio Frequencies (RFs) given are correct as per company norms)
- **PC6.** demonstrate recording of drive test log (dropped calls, blocked calls, handover failures, ta, clock-wise, anti-clockwise handover and inter-connectivity between 5G/VoLTE/UMTS/GSM technology)
- **PC7.** undertake basic analysis of the report generated by Layer 2 and Layer 3 during the drive test/post drive test
- **PC8.** demonstrate the process of creating log files (short call and long call per sector of a site)
- **PC9.** re-check the log files before leaving the site

Fault identification and rectification

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

- **PC10.** identify the nature of fault (due to active or passive components at the tower site)
- **PC11.** coordinate with infra engineer/technicians for rectification and cater overall site performance
- **PC12.** undertake Root Cause Analysis (RCA) with backend team for dropped/blocked calls/handover failure

Knowledge and Understanding (KU)









The individual on the job needs to know and understand:

- **KU1.** risk and impact of not following defined procedures/work instructions
- **KU2.** relevance of records maintenance and implications of non-maintenance of the same
- **KU3.** spare management process and repair and return procedure for faulty equipment
- **KU4.** relevance of Remote Electrical Tilt (RET)
- **KU5.** Safety Health and Environment (SHE) and Occupational Health and Safety (OHS) guidelines and regulations as per company norms
- **KU6.** first aid requirements in case of electrical shocks, cuts, fall from height and other common injuries
- **KU7.** use of safety kit for climbing towers while optimizing the site
- **KU8.** use of fire extinguisher in the vehicle
- **KU9.** troubleshooting technique for laptop, GPS, mobile phone, software, dongle
- **KU10.** principle of directional antennas, sectorization, tilting (Electrical/Mechanical), frequency bands, GSM architecture
- KU11. basic fundamentals of eNodeB, GSM, UMTS, VoLTE network elements
- KU12. functionality and operations of Base Transceiver Station (BTS)
- **KU13.** types of antennas and its radiation pattern
- **KU14.** basic concepts of handovers, frequency reuse, scrambling codes, GSM channels, UMTS and LTE channels, interference, types of interferences, signal strength, power, units conversion
- **KU15.** reasons of call drop, handover failure, poor network coverage issue, swapping

Generic Skills (GS)

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

- **GS1.** fill up appropriate forms, maintain proper records as per given format
- **GS2.** read and comprehend manuals, work orders and reports etc.
- **GS3.** communicate with supervisor and peers
- **GS4.** handle multiple tasks and complete them successfully within due timelines
- **GS5.** use and maintain resources efficiently and effectively
- **GS6.** effectively resolve disputes and manage disagreements
- **GS7.** take initiatives and progressively assume increased responsibilities
- **GS8.** create and maintain effective working relationships with subordinate and other team members









Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Plan area, routes and schedule for conducting drive test	13	18	-	10
PC1. trace a given path on the google earth software, MapInfo software to identify the site location	4	5	-	3
PC2. coordinate with the support team to schedule the drive test	2	4	-	3
PC3. plan the drive test route	4	5	-	2
PC4. check/rectify the fault, site alarm (if any) before initiating the drive test	3	4	-	2
On-site activity	14	23	-	7
PC5. demonstrate test compliances (no swap in the sector, all neighboring cell parameters are defined and all Radio Frequencies (RFs) given are correct as per company norms)	5	7	-	2
PC6. demonstrate recording of drive test log (dropped calls, blocked calls, handover failures, ta, clock-wise, anti-clockwise handover and interconnectivity between 5G/VoLTE/UMTS/GSM technology)	4	7	-	2
PC7. undertake basic analysis of the report generated by Layer 2 and Layer 3 during the drive test/post drive test	3	5	-	1
PC8. demonstrate the process of creating log files (short call and long call per sector of a site)	1	2	-	1
PC9. re-check the log files before leaving the site	1	2	-	1
Fault identification and rectification	3	9	-	3
PC10. identify the nature of fault (due to active or passive components at the tower site)	1	3	-	1
PC11. coordinate with infra engineer/technicians for rectification and cater overall site performance	1	3	-	1









Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. undertake Root Cause Analysis (RCA) with backend team for dropped/blocked calls/handover failure	1	3	-	1
NOS Total	30	50	-	20









National Occupational Standards (NOS) Parameters

NOS Code	TEL/N6238
NOS Name	Tower Site Performance Measurement and Parameter Recording
Sector	Telecom
Sub-Sector	Network Managed Services
Occupation	Network Operation and Maintenance
NSQF Level	5
Credits	4
Version	3.0
Last Reviewed Date	NA
Next Review Date	24/02/2025
NSQC Clearance Date	24/02/2022









TEL/N6239: Tower Site Data Analysis and Reporting

Description

This OS unit is about analysing various parameters of the site with the help of recorded log and reports.

Scope

The scope covers the following:

- Analyze drive test reports
- · Report and document the network status

Elements and Performance Criteria

Analyze drive test report

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

- **PC1.** analyse all the parameters related to drive test for 5G and legacy networks (Rx level, Rx quality, C/I, SQI, UL/DL throughput)
- **PC2.** analyse all parameters related to drive test for 5G and legacy networks (RSCP, RSSI, SC, CQI, UL/DL throughput, RSRP, RSRQ, PCI, SINR, MO/MT, AT/DT, ping testing)
- **PC3.** analyse key site parameters (network coverage analysis, overshooting analysis, pollution analysis, neighbour site analysis, call drop analysis, delay analysis and network KPI analysis)

Reporting and documenting the status

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

- **PC4.** record faults and take corrective actions
- **PC5.** fill all the required details in drive test report template
- **PC6.** generate performance report (covering vector map, cell site details, export of recorded log files)

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1. risk and impact of not following defined procedures/work instructions
- **KU2.** data analysis and corrective action policy and procedures
- **KU3.** record keeping policy
- **KU4.** work safety policy
- **KU5.** telecom technology (5G and legacy network)
- **KU6.** types of antennas and coverage pattern
- **KU7.** effect of various parameters on antenna coverage
- **KU8.** types and reasons for faults and corrective measures
- KU9. technical documentation









Generic Skills (GS)

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

- GS1. fill up appropriate forms, maintain proper records as per given format
- **GS2.** read and comprehend manuals, work orders, health and safety instructions, reports etc.
- GS3. communicate with supervisor and peers
- **GS4.** handle multiple tasks and complete them successfully within due timelines
- **GS5.** use and maintain resources efficiently and effectively
- **GS6.** take initiatives and progressively assume increased responsibilities
- **GS7.** create and maintain effective working relationships with subordinate and other team members









Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Analyze drive test report	15	31	-	12
PC1. analyse all the parameters related to drive test for 5G and legacy networks (Rx level, Rx quality, C/I, SQI, UL/DL throughput)	5	9	-	4
PC2. analyse all parameters related to drive test for 5G and legacy networks (RSCP, RSSI, SC, CQI, UL/DL throughput, RSRP, RSRQ, PCI, SINR, MO/MT, AT/DT, ping testing)	5	10	-	4
PC3. analyse key site parameters (network coverage analysis, overshooting analysis, pollution analysis, neighbour site analysis, call drop analysis, delay analysis and network KPI analysis)	5	12	-	4
Reporting and documenting the status	15	19	-	8
PC4. record faults and take corrective actions	5	7	-	3
PC5. fill all the required details in drive test report template	5	5	-	2
PC6. generate performance report (covering vector map, cell site details, export of recorded log files)	5	7	-	3
NOS Total	30	50	-	20









National Occupational Standards (NOS) Parameters

NOS Code	TEL/N6239
NOS Name	Tower Site Data Analysis and Reporting
Sector	Telecom
Sub-Sector	Network Managed Services
Occupation	Network Operation and Maintenance
NSQF Level	5
Credits	4
Version	3.0
Last Reviewed Date	NA
Next Review Date	24/02/2025
NSQC Clearance Date	24/02/2022









TEL/N6240: Tower Site Optimization and Troubleshooting

Description

This OS unit is about tower site optimization and troubleshooting to resolve local issues and achieve network Key Performance indicators (KPIs).

Scope

The scope covers the following:

Coordinate activities for performing physical network optimization and troubleshooting

Elements and Performance Criteria

Coordinate activities for performing physical network optimization and troubleshooting

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

- **PC1.** coordinate with the technician for site antenna adjustment (azimuths, antenna tilts (Electrical/Mechanical), antenna height and orientation)
- **PC2.** undertake network parameter checks (5G and legacy network parameters BTS, NodeB, eNodeB, transmit power, feature algorithms, frequency hoping)
- **PC3.** capture GPS direction and latitude/longitude of any immediate obstructions (tall building, chimney, water tank etc.)
- PC4. identify the cable/antenna swap (if any) and prepare connectors in case of any fault detected
- **PC5.** undertake corrective actions (based on analysis of the local site parameters)

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- **KU1.** risk and impact of not following defined procedures/work instructions
- **KU2.** relevance of records maintenance and implications of non-maintenance of the same
- **KU3.** spare management and repair and return process
- **KU4.** Safety Health and Environment (SHE) and Occupational Health and Safety (OHS) guidelines and regulations as per company norms
- **KU5.** first aid requirements in case of electrical shocks, cuts, fall from height and other common injuries
- **KU6.** the use of safety kit for climbing towers while optimizing the site
- **KU7.** effects of antenna tilt, direction, azimuth and height on network performance equipment (5G and legacy network equipment BTS, NodeB, eNodeB)
- **KU8.** site performance parameters and their optimal values
- **KU9.** effects of obstruction on tower site performance
- **KU10.** corrective and mitigating actions to improve site performance
- **KU11.** operation and troubleshooting of site equipment (GPS, Handset, car charger, dongle, mouse GPS, Data Card)









Generic Skills (GS)

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

- GS1. fill up appropriate technical forms, maintain proper records as per given format
- **GS2.** read and comprehend manuals, work orders, health and safety instructions, reports etc.
- GS3. communicate with supervisor and peers
- **GS4.** handle multiple tasks and complete them successfully within due timelines
- **GS5.** use and maintain resources efficiently and effectively
- **GS6.** take initiatives and progressively assume increased responsibilities
- **GS7.** create and maintain effective working relationships with subordinate and other team members









Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Coordinate activities for performing physical network optimization and troubleshooting	30	60	-	10
PC1. coordinate with the technician for site antenna adjustment (azimuths, antenna tilts (Electrical/Mechanical), antenna height and orientation)	6	14	-	2
PC2. undertake network parameter checks (5G and legacy network parameters - BTS, NodeB, eNodeB, transmit power, feature algorithms, frequency hoping)	7	14	-	2
PC3. capture GPS direction and latitude/longitude of any immediate obstructions (tall building, chimney, water tank etc.)	8	12	-	2
PC4. identify the cable/antenna swap (if any) and prepare connectors in case of any fault detected	5	15	-	2
PC5. undertake corrective actions (based on analysis of the local site parameters)	4	5	-	2
NOS Total	30	60	-	10









National Occupational Standards (NOS) Parameters

NOS Code	TEL/N6240
NOS Name	Tower Site Optimization and Troubleshooting
Sector	Telecom
Sub-Sector	Network Managed Services
Occupation	Network Operation and Maintenance
NSQF Level	5
Credits	5
Version	3.0
Last Reviewed Date	NA
Next Review Date	24/02/2025
NSQC Clearance Date	24/02/2022









TEL/N9103: Implement Effective Interaction at workplace

Description

This OS unit is about communicating 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.** interpret work requirements from the superior and customers
- PC2. report any unforeseen disruptions or delays to superiors and/or concerned person
- **PC3.** achieve productivity and quality of work as per the company procedure

Interact effectively with colleagues and customers

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

- **PC4.** explain the work requirements and the scope of work to the team
- **PC5.** communicate information using different techniques such as face-to-face, telephonic and written means
- **PC6.** co-ordinate with team to integrate work as per requirements
- **PC7.** respect colleagues and customers and communicate taking care of their personal spaces
- **PC8.** find solutions to work related difficulties with mutual agreement with colleagues and customers
- **PC9.** resolve conflicts within the team at work to achieve smooth workflow
- **PC10.** motivate team members to put organizational goals over individual goals
- **PC11.** encourage the team to provide feedback on any issues facing them

Respect differences of gender and ability

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

- **PC12.** ensure personal behaviour of self and team is conducted taking gender and disability of the person into consideration
- PC13. demonstrate sensitivity towards gender and person with disability while communicating
- **PC14.** list the different types of disabilities with their respective issues
- PC15. provide help to PwD team members in overcoming any challenges faced in work
- **PC16.** use inclusive language irrespective of the disability and the gender of the person
- **PC17.** treat all colleagues and co-workers equally









PC18. respect personal space of colleagues and co-workers

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- **KU1.** importance of effective and different means of communication and establishing good working relationships with colleagues and superiors
- **KU2.** importance of helping colleagues with problems, in order to meet quality and time standards as a team
- **KU3.** different methods of communication
- **KU4.** different types of information that colleagues might need and the importance of providing this information in an appropriate manner
- **KU5.** helping colleagues with problems, in order to meet quality and time standards as a team
- **KU6.** organisation's policies and procedures for working with colleagues and superior
- **KU7.** implications of own work on the work and schedule of others
- **KU8.** importance of understanding consequences of gender based 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.** rights and duties at workplace with respect to PwD
- **KU13.** process of recruiting people for a particular job profile w.r.t PwD and gender
- **KU14.** 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.** complete written work with attention to detail and read instructions/guidelines/procedures
- **GS2.** listen effectively and orally communicate information
- **GS3.** ask for clarification and advice from the concerned person
- **GS4.** deliver consistent and reliable service to customers
- **GS5.** check that the work meets customer requirements
- **GS6.** practice and acceptance of gender and its concepts
- GS7. develop empathy across genders and towards PwD
- **GS8.** reflect on own gender identity, gender roles and PwD issues
- **GS9.** engage and participate in discussions to end gender and disability discrimination
- **GS10.** improve and modify work practices
- **GS11.** maintain positive and effective relationships with colleagues and customers
- **GS12.** evaluate the possible solution(s) to the problem









Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Interact effectively with superiors	2	9	-	1
PC1. interpret work requirements from the superior and customers	1	2	-	-
PC2. report any unforeseen disruptions or delays to superiors and/or concerned person	1	2	-	1
PC3. achieve productivity and quality of work as per the company procedure	-	5	-	-
Interact effectively with colleagues and customers	13	27	-	5
PC4. explain the work requirements and the scope of work to the team	2	3	-	-
PC5. communicate information using different techniques such as face-to-face, telephonic and written means	2	4	-	1
PC6. co-ordinate with team to integrate work as per requirements	-	4	-	1
PC7. respect colleagues and customers and communicate taking care of their personal spaces	-	3	-	-
PC8. find solutions to work related difficulties with mutual agreement with colleagues and customers	3	3	-	-
PC9. resolve conflicts within the team at work to achieve smooth workflow	-	4	-	1
PC10. motivate team members to put organizational goals over individual goals	3	4	-	1
PC11. encourage the team to provide feedback on any issues facing them	3	2	-	1
Respect differences of gender and ability	15	24	-	4
PC12. ensure personal behaviour of self and team is conducted taking gender and disability of the person into consideration	2	4	-	-









Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. demonstrate sensitivity towards gender and person with disability while communicating	2	3	-	1
PC14. list the different types of disabilities with their respective issues	2	3	-	1
PC15. provide help to PwD team members in overcoming any challenges faced in work	2	3	-	-
PC16. use inclusive language irrespective of the disability and the gender of the person	2	3	-	1
PC17. treat all colleagues and co-workers equally	2	3	-	-
PC18. respect personal space of colleagues and co-workers	3	5	-	1
NOS Total	30	60	-	10









National Occupational Standards (NOS) Parameters

NOS Code	TEL/N9103
NOS Name	Implement Effective Interaction at workplace
Sector	Telecom
Sub-Sector	Generic
Occupation	Generic
NSQF Level	5
Credits	1
Version	2.0
Last Reviewed Date	NA
Next Review Date	24/02/2025
NSQC Clearance Date	24/02/2022









TEL/N9104: Manage Work, Resources and Safety at workplace

Description

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

Scope

The scope covers the following:

- Manage learning and self-direction
- Develop critical thinking and problem solving
- Perform work as per quality standards
- Maintain safe and secure working environment
- Comply with material / energy / electricity conservation practices

Elements and Performance Criteria

Manage learning and self-direction

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

- **PC1.** develop technical and personal skills to be updated with new technologies prevalent in the industry
- **PC2.** train the team such that they are able to adapt latest products/services in their working environment
- **PC3.** identify opportunities for team building workshops and motivational trainings

Develop critical thinking and problem solving

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

- **PC4.** guide the team to be accountable for timely completion of tasks
- **PC5.** analyse problems accurately to be able to correctly suggest suitable solutions to the concerned persons
- **PC6.** train the team to estimate the cause of the problem and validate

Perform work as per quality standards

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

- **PC7.** implement ways to keep immediate as well as team's work area clean and tidy
- **PC8.** maintain efficiency and productivity while performing role/responsibility
- **PC9.** supervise the team to ensure that the work is done as per the assigned and agreed requirements
- **PC10.** create schedules and rosters for the team to ensure they understand individual work requirements

Maintain safe and secure working environment

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

PC11. identify organisation's health, safety, security policies and procedures









- **PC12.** instruct team to report any identified breaches in health, safety, and security policies and procedures to the designated person
- **PC13.** manage 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
- **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

Material / energy / electricity conservation practices

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

- **PC15.** implement ways to optimize usage of material including water in various tasks/activities/processes
- **PC16.** supervise the team to ensure responsible use of resources
- **PC17.** motivate the team to carry out routine cleaning of tools, machine and equipment
- **PC18.** guide the team to optimize use of electricity/energy in various tasks/activities/processes
- **PC19.** implement periodic checks of the functioning of the equipment/machine and rectify wherever required
- **PC20.** guide the team to report malfunctioning and lapses in maintenance of equipment
- **PC21.** implement ways to use electrical equipment and appliances properly

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- **KU1.** strategies pertinent to the field that can be used to pursue an advancement of 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.** layout of the workstation and equipment used
- **KU7.** escalation matrix and its importance, especially in case of emergencies
- **KU8.** ways of time and cost management
- **KU9.** rules/regulation for maintaining health and safety at workplace
- **KU10.** meaning of hazard, different types of health and safety hazards found in the workplace, risks and threats based on the nature of work
- **KU11.** procedures to report breaches in health, safety and security
- **KU12.** ways of managing resources and material efficiently
- **KU13.** ways to recognize common electrical problems and common practices of conserving electricity

Generic Skills (GS)

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

GS1. explore various pathways to expand one's own learning skills and abilities









- **GS2.** analyse feedback for improving one's way of working
- **GS3.** interpret feedback from superiors in a constructive way
- **GS4.** identify the root cause of problems
- **GS5.** understand the problem by asking significant questions to clarify the various points of view on the problem
- **GS6.** seek clarifications from superior about the job requirement
- **GS7.** work in a team with full coordination of team members
- **GS8.** read instructions/guidelines and Standard Operating Practices (SOP) documents
- **GS9.** complete tasks efficiently and accurately within stipulated time
- **GS10.** record data in statutory documents relevant to safety and hygiene
- **GS11.** escalate/refer all anomalies to the concerned persons
- **GS12.** identify the most suitable course of action for completing the task using provided resources









Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Manage learning and self-direction	4	5	-	-
PC1. develop technical and personal skills to be updated with new technologies prevalent in the industry	2	1	-	-
PC2. train the team such that they are able to adapt latest products/services in their working environment	1	2	-	-
PC3. identify opportunities for team building workshops and motivational trainings	1	2	-	-
Develop critical thinking and problem solving	4	7	-	-
PC4. guide the team to be accountable for timely completion of tasks	2	3	-	-
PC5. analyse problems accurately to be able to correctly suggest suitable solutions to the concerned persons	1	2	-	-
PC6. train the team to estimate the cause of the problem and validate	1	2	-	-
Perform work as per quality standards	5	9	-	4
PC7. implement ways to keep immediate as well as team's work area clean and tidy	1	2	-	-
PC8. maintain efficiency and productivity while performing role/responsibility	1	2	-	2
PC9. supervise the team to ensure that the work is done as per the assigned and agreed requirements	1	2	-	1
PC10. create schedules and rosters for the team to ensure they understand individual work requirements	2	3	-	1
Maintain safe and secure working environment	12	13	-	2
PC11. identify organisation's health, safety, security policies and procedures	3	3	-	-









Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. instruct team to report any identified breaches in health, safety, and security policies and procedures to the designated person	3	3	-	-
PC13. manage 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	3	4	-	1
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	3	3	-	1
Material / energy / electricity conservation practices	15	16	-	4
PC15. implement ways to optimize usage of material including water in various tasks/activities/processes	1	2	-	1
PC16. supervise the team to ensure responsible use of resources	2	2	-	1
PC17. motivate the team to carry out routine cleaning of tools, machine and equipment	2	2	-	1
PC18. guide the team to optimize use of electricity/energy in various tasks/activities/processes	3	4	-	-
PC19. implement periodic checks of the functioning of the equipment/machine and rectify wherever required	2	2	-	1
PC20. guide the team to report malfunctioning and lapses in maintenance of equipment	3	2	-	-
PC21. implement ways to use electrical equipment and appliances properly	2	2	-	-
NOS Total	40	50	-	10









National Occupational Standards (NOS) Parameters

NOS Code	TEL/N9104
NOS Name	Manage Work, Resources and Safety at workplace
Sector	Telecom
Sub-Sector	Generic
Occupation	Generic
NSQF Level	5
Credits	1
Version	2.0
Last Reviewed Date	NA
Next Review Date	24/02/2025
NSQC Clearance Date	24/02/2022









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

Description

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

Scope

The scope covers the following:

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

Elements and Performance Criteria

Introduction to Employability Skills

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

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

Constitutional values - Citizenship

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

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

Becoming a Professional in the 21st Century

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

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

Basic English Skills

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









- **PC7.** use basic English for everyday conversation in different contexts, in person and over the telephone
- **PC8.** read and understand routine information, notes, instructions, mails, letters etc. written in English
- **PC9.** write short messages, notes, letters, e-mails etc. in English

Career Development & Goal Setting

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

- PC10. understand the difference between job and career
- **PC11.** prepare a career development plan with short- and long-term goals, based on aptitude *Communication Skills*

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

- **PC12.** follow verbal and non-verbal communication etiquette and active listening techniques in various settings
- PC13. work collaboratively with others in a team

Diversity & Inclusion

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

- PC14. communicate and behave appropriately with all genders and PwD
- PC15. escalate any issues related to sexual harassment at workplace according to POSH Act

Financial and Legal Literacy

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

- **PC16.** select financial institutions, products and services as per requirement
- **PC17.** carry out offline and online financial transactions, safely and securely
- **PC18.** identify common components of salary and compute income, expenses, taxes, investments etc
- **PC19.** identify relevant rights and laws and use legal aids to fight against legal exploitation *Essential Digital Skills*

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

- **PC20.** operate digital devices and carry out basic internet operations securely and safely
- PC21. use e- mail and social media platforms and virtual collaboration tools to work effectively
- PC22. use basic features of word processor, spreadsheets, and presentations

Entrepreneurship

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

- **PC23.** identify different types of Entrepreneurship and Enterprises and assess opportunities for potential business through research
- **PC24.** develop a business plan and a work model, considering the 4Ps of Marketing Product, Price, Place and Promotion
- **PC25.** identify sources of funding, anticipate, and mitigate any financial/ legal hurdles for the potential business opportunity

Customer Service

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

- **PC26.** identify different types of customers
- **PC27.** identify and respond to customer requests and needs in a professional manner.









PC28. follow appropriate hygiene and grooming standards

Getting ready for apprenticeship & Jobs

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

- PC29. create a professional Curriculum vitae (Résumé)
- **PC30.** search for suitable jobs using reliable offline and online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals, respectively
- PC31. apply to identified job openings using offline /online methods as per requirement
- **PC32.** answer questions politely, with clarity and confidence, during recruitment and selection
- **PC33.** identify apprenticeship opportunities and register for it as per guidelines and requirements

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1. need for employability skills and different learning and employability related portals
- **KU2.** various constitutional and personal values
- **KU3.** different environmentally sustainable practices and their importance
- **KU4.** Twenty first (21st) century skills and their importance
- **KU5.** how to use English language for effective verbal (face to face and telephonic) and written communication in formal and informal set up
- **KU6.** importance of career development and setting long- and short-term goals
- **KU7.** about effective communication
- KU8. POSH Act
- **KU9.** Gender sensitivity and inclusivity
- **KU10.** different types of financial institutes, products, and services
- **KU11.** how to compute income and expenditure
- **KU12.** importance of maintaining safety and security in offline and online financial transactions
- KU13. different legal rights and laws
- **KU14.** different types of digital devices and the procedure to operate them safely and securely
- **KU15.** how to create and operate an e- mail account and use applications such as word processors, spreadsheets etc.
- **KU16.** how to identify business opportunities
- **KU17.** types and needs of customers
- **KU18.** how to apply for a job and prepare for an interview
- **KU19.** apprenticeship scheme and the process of registering on apprenticeship portal

Generic Skills (GS)

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

- **GS1.** read and write different types of documents/instructions/correspondence
- GS2. communicate effectively using appropriate language in formal and informal settings









- GS3. behave politely and appropriately with all
- **GS4.** how to work in a virtual mode
- **GS5.** perform calculations efficiently
- **GS6.** solve problems effectively
- **GS7.** pay attention to details
- **GS8.** manage time efficiently
- **GS9.** maintain hygiene and sanitization to avoid infection









Assessment Criteria

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









Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC10. understand the difference between job and career	-	-	-	-
PC11. prepare a career development plan with short- and long-term goals, based on aptitude	-	-	-	-
Communication Skills	2	2	-	-
PC12. follow verbal and non-verbal communication etiquette and active listening techniques in various settings	-	-	-	-
PC13. work collaboratively with others in a team	-	-	-	-
Diversity & Inclusion	1	2	-	-
PC14. communicate and behave appropriately with all genders and PwD	-	-	-	-
PC15. escalate any issues related to sexual harassment at workplace according to POSH Act	-	-	-	-
Financial and Legal Literacy	2	3	-	-
PC16. select financial institutions, products and services as per requirement	-	-	-	-
PC17. carry out offline and online financial transactions, safely and securely	-	-	-	-
PC18. identify common components of salary and compute income, expenses, taxes, investments etc	-	-	-	-
PC19. identify relevant rights and laws and use legal aids to fight against legal exploitation	-	-	-	-
Essential Digital Skills	3	4	-	-
PC20. operate digital devices and carry out basic internet operations securely and safely	-	-	-	-
PC21. use e- mail and social media platforms and virtual collaboration tools to work effectively	-	-	-	-
PC22. use basic features of word processor, spreadsheets, and presentations	-	-	-	-









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









National Occupational Standards (NOS) Parameters

NOS Code	DGT/VSQ/N0102
NOS Name	Employability Skills (60 Hours)
Sector	Cross Sectoral
Sub-Sector	Professional Skills
Occupation	Employability
NSQF Level	4
Credits	2
Version	1.0
Last Reviewed Date	NA
Next Review Date	24/02/2025
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/N6237.Tower Site Verification and Preparation for Drive Test	30	60	-	10	100	20
TEL/N6238.Tower Site Performance Measurement and Parameter Recording	30	50	-	20	100	20
TEL/N6239.Tower Site Data Analysis and Reporting	30	50	-	20	100	15
TEL/N6240.Tower Site Optimization and Troubleshooting	30	60	-	10	100	15
TEL/N9103.Implement Effective Interaction at workplace	30	60	-	10	100	10
TEL/N9104.Manage Work, Resources and Safety at workplace	40	50	-	10	100	10
DGT/VSQ/N0102.Employability Skills (60 Hours)	20	30	-	-	50	10
Total	210	360	-	80	650	100









Acronyms

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









Glossary

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









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