

Qualification Pack



Infrastructure Engineer

QP Code: TEL/Q6100

Version: 1.0

NSQF Level: 5

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

Qualification Pack

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TEL/Q6100: Infrastructure Engineer

Brief Job Description

Infrastructure engineer is responsible for ensuring site uptime through preventive and corrective maintenance of passive infrastructure at sites. He also coordinates infrastructure upgradation activities and ensures timely payments of rent, diesel and electricity charges after validating the vendor bills.

Personal Attributes

This job requires the individual to work closely with multiple teams and third party vendors. The individual should be willing to work on-field and be able to handle high pressure situations. He should be adaptable to changing work environments and have good practical knowledge to successfully perform the assigned responsibilities.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. [TEL/N6100: Perform preventive maintenance of Passive Infrastructure equipment at radio locations](#)
2. [TEL/N6101: Perform corrective maintenance/ fault management of Passive Infrastructure at radio locations](#)
3. [TEL/N6102: Undertake upgradation of Passive infrastructure at radio locations](#)
4. [TEL/N6103: Undertake other operational activities at radio sites](#)

Qualification Pack (QP) Parameters

Sector	Telecom
Sub-Sector	Network Managed Services
Occupation	Operations and Maintenance - Passive Infrastructure
Country	India
NSQF Level	5
Aligned to NCO/ISCO/ISIC Code	NCO-2015/7422.0204

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Minimum Educational Qualification & Experience	I.T.I (Electronics, Computer Science, IT and related field) with 1-2 Years of experience Worked as Infrastructure technician OR Diploma (Electronics, Computer Science, IT and related field)
Minimum Level of Education for Training in School	
Pre-Requisite License or Training	Technical trainings on Passive Infrastructure equipments deployed at Radio sites
Minimum Job Entry Age	21 Years
Last Reviewed On	21/06/2018
Next Review Date	31/03/2022
NSQC Approval Date	20/07/2015
Version	1.0
Reference code on NQR	2015/TEL/TSSC/00980
NQR Version	1.0

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TEL/N6100: Perform preventive maintenance of Passive Infrastructure equipment at radio locations

Description

This unit is about carrying out preventive maintenance activities for passive equipments like DG Sets, Battery bank, SMPS

Scope

This unit/task covers the following:

- Ensure adherence to the preventive maintenance schedule
- Carry out preventive maintenance of Passive Infrastructure equipments
- Reporting and documenting the status at the end of scheduled activity

Elements and Performance Criteria

Obtain schedule & notify NOC

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

- PC1.** Ensure maintenance of site folder containing site listing, DG and powercapacity, equipment types and vendors

Obtain schedule & notify NOC

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

- PC2.** Obtain the preventive maintenance schedule and the corresponding checklist from the supervisors
- PC3.** Suggest changes to the planned maintenance schedule considering site criticality, capacity, and frequency of faults if required.
- PC4.** Ensure Network Operating Centre (NOC) is notified prior to undertaking the maintenance activities

Arrange for tools and spares

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

- PC5.** Ensure availability of necessary tools, test equipment and resources to undertake the maintenance
- PC6.** Ensure availability of spare hardware equipments and raise request for spares, in case the same are not available as per company's process
- PC7.** Ensure that faulty equipments are sent to logistics team for repair and replacement

Undertake Periodic Maintenance activities

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

- PC8.** Ensure review of daily and weekly maintenance activities performed by the infrastructure technicians
- PC9.** Ensure completion of standard maintenance activities like checking battery -voltage levels; dg set - oil filter, lubrication; air conditioner - refill gas, clean evaporator and condenser, other power equipments (including mcbs, powerplan)

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- PC10.** Ensure review of equipment grouting, earthing connections, watering of earthing pit, site matting for insulation, adequacy of wiring
- PC11.** Ensure site up-keep - check for leakages, oil/ diesel spillages, condition of cable trays and upkeep of tower (through riggers).
- PC12.** Obtain and record readings from piu panels on input and output voltage and current levels
- PC13.** Ensure that for 3rd party elements that require maintenance, tickets are raised to the respective vendors by the noc team if required
- PC14.** Ensure timely escalation of emergency incidents like passive equipment failures, fire and power failures

Test effectiveness & close activity

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

- PC15.** Confirm effectiveness of the maintenance process, by monitoring site's alarm status in coordination with the NOC team
- PC16.** Ensure completion of administrative jobs like site clearance, return of test equipments

Health and Safety

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

- PC17.** Ensure compliance with site risk control, ohs, environmental and quality requirements as per company's norms
- PC18.** Ensure that work is carried out in accordance to the level of competence and legal requirements
- PC19.** Ensure that hazards associated with the workplace that have not been previously controlled, are reported in accordance with appropriate procedures
- PC20.** Ensure that personal protection equipments like harness, waist belt are appropriately used as required
- PC21.** Ensure availability of first aid box at site
- PC22.** Ensure escalation of safety incidents to relevant authorities as per guidelines

Report & Record

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

- PC23.** Ensure all relevant parties (including FM engineer, NOC team, supervisors) are notified of the results of the maintenance result and obtain the sign-off from relevant personnel
- PC24.** Ensure that documents that are required to be updated are identified
- PC25.** Ensure completion of routine maintenance logs, activity logs and spare tracker within stipulated timelines
- PC26.** Ensure that documents are available to all appropriate authorities to inspect

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.** Escalation matrix for reporting identified incidents, troubles and/ or emergencies e.g. system failures, fire and power failures
- KU3.** Types of documentation in organization and importance of the same
- KU4.** Records to be maintained and implications of non-maintenance of the same

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- KU5.** Process for obtaining sign-off post completion of the maintenance activities
- KU6.** Knowledge of spare management and repair & return process for faulty equipments
- KU7.** She and ohs guidelines and regulations as per companys norms
- KU8.** Protection equipments (harness, belts, helmet, insulation gloves) that arerequired to be used
- KU9.** First aid requirements in case of electrical shocks, cuts, fall from height andother common injuries
- KU10.** Electrical and chemical related hazards and precautionary measures
- KU11.** Usage of safety kit for climbing towers
- KU12.** Usage of fire safety equipments
- KU13.** Functionality of passive infrastructure equipments like dg set, piu panel,transformer, smps, air conditioner, battery bank
- KU14.** Need and requirement of earthing the equipments
- KU15.** Mechanism to maintain the earthing pit to absolute zero
- KU16.** Functionality of tools like pliers, power drill, screwdrivers, spanner
- KU17.** Knowledge of using and deploying cable connectors, cable ties, cable tray
- KU18.** Electrical wiring requirements at site and their labeling/ color coding
- KU19.** Site power requirements based on equipment rating
- KU20.** Power capacities of dg set, battery bank and smps based on their models
- KU21.** Phase and level of power received from the electrical board
- KU22.** Standard preventive maintenance activities that need to be carried out
- KU23.** Standard fault-finding (troubleshooting) technique

Generic Skills (GS)

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

- GS1.** Liaise and coordinate with third party vendors
- GS2.** Communicate with supervisor
- GS3.** Communicate in the local language
- GS4.** Prioritize and execute tasks in a high-pressure environment
- GS5.** Multi-task by handling multiple tasks and completing them successfully within due timelines
- GS6.** Use and maintain resources efficiently and effectively
- GS7.** Be flexible and accept changes in job requirements, schedules, or workenvironments
- GS8.** Interpret reports, readings and numerical data
- GS9.** Source technical information by researching manufacturer's technicaldocumentation
- GS10.** Create and maintain effective working relationships and team environment
- GS11.** Take initiatives and progressively assume increased responsibilities
- GS12.** Share knowledge with other team members and colleagues
- GS13.** Effectively resolve disputes and manage disagreements
- GS14.** Operate passive infrastructure equipments like dg set, piu panel, earthingsystems, transformer, smps, air conditioner, battery

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- GS15.** Utilize measurement tools like multi-meter and thermometer to measure voltage levels of battery and site temperatures appropriately
- GS16.** Handle and operate tools like pliers, power drill, screwdrivers, sockets, spanner
- GS17.** Use appropriate personal protective gear while carrying out activities at sites
- GS18.** Utilize connectors, cable ties, cable trays for effective and safe wiring

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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Obtain schedule & notify NOC</i>	5	-	-	-
PC1. Ensure maintenance of site folder containing site listing, DG and powercapacity, equipment types and vendors	5	-	-	-
<i>Obtain schedule & notify NOC</i>	15	-	-	-
PC2. Obtain the preventive maintenance schedule and the corresponding checklist from the supervisors	5	-	-	-
PC3. Suggest changes to the planned maintenance schedule considering site criticality, capacity, and frequency of faults if required.	5	-	-	-
PC4. Ensure Network Operating Centre (NOC) is notified prior to undertaking the maintenance activities	5	-	-	-
<i>Arrange for tools and spares</i>	10	5	-	-
PC5. Ensure availability of necessary tools, test equipment and resources to undertake the maintenance	5	-	-	-
PC6. Ensure availability of spare hardware equipments and raise request for spares, in case the same are not available as per company's process	5	-	-	-
PC7. Ensure that faulty equipments are sent to logistics team for repair and replacement	-	5	-	-
<i>Undertake Periodic Maintenance activities</i>	-	25	-	-
PC8. Ensure review of daily and weekly maintenance activities performed by the infrastructure technicians	-	5	-	-
PC9. Ensure completion of standard maintenance activities like checking battery -voltage levels; dg set - oil filter, lubrication; air conditioner - refill gas, clean evaporator and condenser, other power equipments (including mcbs, powerplan)	-	5	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC10. Ensure review of equipment grouting, earthing connections, watering of earthing pit, site matting for insulation, adequacy of wiring	-	3	-	-
PC11. Ensure site up-keep - check for leakages, oil/diesel spillages, condition of cable trays and upkeep of tower (through riggers).	-	3	-	-
PC12. Obtain and record readings from piu panels on input and output voltage and current levels	-	3	-	-
PC13. Ensure that for 3rd party elements that require maintenance, tickets are raised to the respective vendors by the noc team if required	-	3	-	-
PC14. Ensure timely escalation of emergency incidents like passive equipment failures, fire and power failures	-	3	-	-
<i>Test effectiveness & close activity</i>	10	-	-	-
PC15. Confirm effectiveness of the maintenance process, by monitoring site's alarm status in coordination with the NOC team	5	-	-	-
PC16. Ensure completion of administrative jobs like site clearance, return of test equipments	5	-	-	-
<i>Health and Safety</i>	14	6	-	-
PC17. Ensure compliance with site risk control, ohs, environmental and quality requirements as per company's norms	5	-	-	-
PC18. Ensure that work is carried out in accordance to the level of competence and legal requirements	3	-	-	-
PC19. Ensure that hazards associated with the workplace that have not been previously controlled, are reported in accordance with appropriate procedures	3	-	-	-
PC20. Ensure that personal protection equipments like harness, waist belt are appropriately used as required	-	3	-	-
PC21. Ensure availability of first aid box at site	-	3	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC22. Ensure escalation of safety incidents to relevant authorities as per guidelines	3	-	-	-
<i>Report & Record</i>	10	-	-	-
PC23. Ensure all relevant parties (including FM engineer, NOC team, supervisors) are notified of the results of the maintenance result and obtain the sign-off from relevant personnel	3	-	-	-
PC24. Ensure that documents that are required to be updated are identified	2	-	-	-
PC25. Ensure completion of routine maintenance logs, activity logs and spare tracker within stipulated timelines	3	-	-	-
PC26. Ensure that documents are available to all appropriate authorities to inspect	2	-	-	-
NOS Total	64	36	-	-

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National Occupational Standards (NOS) Parameters

NOS Code	TEL/N6100
NOS Name	Perform preventive maintenance of Passive Infrastructure equipment at radio locations
Sector	Telecom
Sub-Sector	Network Managed Services
Occupation	Operation & Maintenance- Passive Infrastructure
NSQF Level	5
Credits	TBD
Version	1.0
Last Reviewed Date	21/06/2018
Next Review Date	31/03/2022
NSQC Clearance Date	20/07/2015

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TEL/N6101: Perform corrective maintenance/ fault management of Passive Infrastructure at radio locations

Description

This unit is about carrying out fault management activities for Passive infrastructure at BSS locations

Scope

This unit/task covers the following:

- Ensure timely response to the network alarms/ trouble tickets
- Rectify fault condition in co-ordination with other 3rd party vendors and escalate in case additional support is required
- Reporting and documenting the status of the activity

Elements and Performance Criteria

Respond to Network Alarm

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

- PC1.** determine alarm severity, SLAs and affected network elements
- PC2.** provide information to and seek advice from other relevant parties in identifying the problem and cause of the alarm condition
- PC3.** prioritize actioning on alarms based on fault's service impact analysis

Arrange for tools and spares

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

- PC4.** ensure availability of necessary tools, test equipment and resources to undertake the maintenance
- PC5.** ensure availability of spare hardware equipments and raise request for spares, in case the same are not available as per company's process
- PC6.** ensure that faulty equipments are sent to logistics team for repair and replacement

Identify and rectify faults

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

- PC7.** carry out initial diagnostic tests to identify the root cause of the alarm within defined SLAs
- PC8.** determine the options to rectify the fault and confirm with supervisors if required
- PC9.** ensure that faults pertaining to amf panel, alarm panel, mcbs, battery bank, smps, dg set are rectified appropriately
- PC10.** escalate unresolved faults/ instances of delays in resolution as per company's policy
- PC11.** ensure timely completion of work by monitoring activities performed by the riggers and other technicians
- PC12.** comply with site risk control, OHS, environmental and quality requirements as per company's norms

Test effectiveness & close activity

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

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PC13. confirm effectiveness of the maintenance process by monitoring site's alarmstatus in co-ordination with the NOC team

PC14. ensure completion of administrative jobs like site clearance, return of testequipments

Health and Safety

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

PC15. ensure compliance with site risk control, OHS, environmental and qualityrequirements as per company's norms

PC16. ensure that work is carried out in accordance to the level of competence andlegal requirements

PC17. ensure that hazards associated with the workplace that have not beenpreviously controlled, are reported in accordance with appropriate procedures

PC18. ensure that personal protection equipments like harness, waist belt areappropriately used as required

PC19. ensure availability of first aid box at site

PC20. ensure escalation of safety incidents to relevant authorities as per guidelines

Report & Record

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

PC21. ensure all relevant parties (including fm engineer, noc team, supervisors) arenotified of the results of the maintenance result and obtain the sign-off fromrelevant personnel

PC22. ensure that correct documents that are required to be updated are identified

PC23. ensure completion of routine maintenance logs, activity logs and spare trackerwithin stipulated timelines

PC24. ensure that documents are available to all appropriate authorities to inspect

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

KU3. types of documentation in organization and importance of the same

KU4. records to be maintained and implications of non-maintenance of the same

KU5. process for obtaining sign-off post completion of the maintenance activities

KU6. knowledge of spare management and repair & return process for faultyequipments

KU7. SHE and OHS guidelines and regulations as per companys norms

KU8. protection equipments (harness, belts, helmet, insulation gloves) that arerequired to be used

KU9. first aid requirements in case of electrical shocks, cuts, fall from height andother common injuries

KU10. electrical and chemical related hazards and precautionary measures

KU11. usage of safety kit for climbing towers

KU12. usage of fire safety equipments

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- KU13.** functionality of passive infrastructure equipments like dg set, piu panel, transformer, smps, air conditioner, battery bank
- KU14.** need and requirement of earthing the equipments
- KU15.** mechanism to maintain the earthing pit to absolute zero
- KU16.** functionality of tools like pliers, power drill, screwdrivers, spanner
- KU17.** knowledge of using and deploying cable connectors, cable ties, cable tray
- KU18.** electrical wiring requirements at site and their labeling/ color coding
- KU19.** site power requirements based on equipment rating
- KU20.** power capacities of DG set, battery bank and smps based on their models
- KU21.** phase and level of power received from the electrical board
- KU22.** standard fault-finding (troubleshooting) techniques
- KU23.** alarm types, indicators and resolution SLAs/ timelines
- KU24.** implications for non response to tickets within defined SLAs

Generic Skills (GS)

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

- GS1.** liaise and coordinate with third party vendors
- GS2.** communicate with supervisor
- GS3.** communicate in the local language
- GS4.** prioritize and execute tasks in a high-pressure environment
- GS5.** multi-task by handling multiple tasks and completing them successfully within due timelines
- GS6.** use and maintain resources efficiently and effectively
- GS7.** be flexible and accept changes in job requirements, schedules, or work environments
- GS8.** interpret reports, readings and numerical data
- GS9.** source technical information by researching manufacturer's technical documentation
- GS10.** create and maintain effective working relationships and team environment
- GS11.** take initiatives and progressively assume increased responsibilities
- GS12.** share knowledge with other team members and colleagues
- GS13.** effectively resolve disputes and manage disagreements
- GS14.** operate passive infrastructure equipments like dg set, piu panel, earthing systems, transformer, smps, air conditioner, battery
- GS15.** utilize measurement tools like multi-meter and thermometer to measure voltage levels of battery and site temperatures appropriately
- GS16.** handle and operate tools like pliers, power drill, screwdrivers, sockets, soldering iron, spanner
- GS17.** use appropriate personal protective gear while carrying out activities at sites
- GS18.** utilize connectors, cable ties, cable trays for effective and safe wiring
- GS19.** analyze service impact to prioritize actioning on alarms
- GS20.** troubleshoot common passive equipment related problems
- GS21.** utilize appropriate tools and mechanisms to rectify the faults



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- GS22.** utilize appropriate communication channels to escalate unresolved problems to relevant personnel

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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Respond to Network Alarm</i>	15	5	-	-
PC1. determine alarm severity, SLAs and affected network elements	5	-	-	-
PC2. provide information to and seek advice from other relevant parties in identifying the problem and cause of the alarm condition	5	-	-	-
PC3. prioritize actioning on alarms based on fault's service impact analysis	5	5	-	-
<i>Arrange for tools and spares</i>	15	-	-	-
PC4. ensure availability of necessary tools, test equipment and resources to undertake the maintenance	5	-	-	-
PC5. ensure availability of spare hardware equipments and raise request for spares, in case the same are not available as per company's process	5	-	-	-
PC6. ensure that faulty equipments are sent to logistics team for repair and replacement	5	-	-	-
<i>Identify and rectify faults</i>	-	35	-	-
PC7. carry out initial diagnostic tests to identify the root cause of the alarm within defined SLAs	-	10	-	-
PC8. determine the options to rectify the fault and confirm with supervisors if required	-	5	-	-
PC9. ensure that faults pertaining to amf panel, alarm panel, mcbs, battery bank, smps, dg set are rectified appropriately	-	5	-	-
PC10. escalate unresolved faults/ instances of delays in resolution as per company's policy	-	5	-	-
PC11. ensure timely completion of work by monitoring activities performed by the riggers and other technicians	-	5	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. comply with site risk control, OHS, environmental and quality requirements as per company's norms	-	5	-	-
<i>Test effectiveness & close activity</i>	5	-	-	-
PC13. confirm effectiveness of the maintenance process by monitoring site's alarm status in co-ordination with the NOC team	2	-	-	-
PC14. ensure completion of administrative jobs like site clearance, return of test equipments	3	-	-	-
<i>Health and Safety</i>	12	3	-	-
PC15. ensure compliance with site risk control, OHS, environmental and quality requirements as per company's norms	3	-	-	-
PC16. ensure that work is carried out in accordance to the level of competence and legal requirements	3	-	-	-
PC17. ensure that hazards associated with the workplace that have not been previously controlled, are reported in accordance with appropriate procedures	2	-	-	-
PC18. ensure that personal protection equipments like harness, waist belt are appropriately used as required	2	-	-	-
PC19. ensure availability of first aid box at site	-	3	-	-
PC20. ensure escalation of safety incidents to relevant authorities as per guidelines	2	-	-	-
<i>Report & Record</i>	10	-	-	-
PC21. ensure all relevant parties (including fm engineer, noc team, supervisors) are notified of the results of the maintenance result and obtain the sign-off from relevant personnel	3	-	-	-
PC22. ensure that correct documents that are required to be updated are identified	2	-	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC23. ensure completion of routine maintenance logs, activity logs and spare tracker within stipulated timelines	3	-	-	-
PC24. ensure that documents are available to all appropriate authorities to inspect	2	-	-	-
NOS Total	57	43	-	-

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National Occupational Standards (NOS) Parameters

NOS Code	TEL/N6101
NOS Name	Perform corrective maintenance/ fault management of Passive Infrastructure at radio locations
Sector	Telecom
Sub-Sector	Network Managed Services
Occupation	Operation & Maintenance- Passive Infrastructure
NSQF Level	5
Credits	TBD
Version	1.0
Last Reviewed Date	21/06/2018
Next Review Date	31/03/2022
NSQC Clearance Date	20/07/2015

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TEL/N6102: Undertake upgradation of Passive infrastructure at radio locations

Description

This unit is about carrying out upgrade activities for passive infrastructure at Radio locations (enhanced capacity DG set, battery banks, Air conditioner, power plant)

Scope

This unit/task covers the following:

- Ensure timely response to the change request/ work orders
- Test effectiveness of change
- Reporting and documenting the status

Elements and Performance Criteria

Determine change requirement

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

- PC1.** receive change requests from the relevant teams (project team/ supervisors)
- PC2.** identify activity type to be performed - hardware upgrade, change of PIU, panels
- PC3.** identify criticality, and timelines for carrying out the changes
- PC4.** develop work plan and identify dependencies, if any
- PC5.** assess the potential impact of the proposed activity and plan for possible outage condition or deferral of the activity
- PC6.** ensure that network operating centre (noc) is notified prior to undertaking the change activities

Co-ordinate implementation of upgrade activities

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

- PC7.** ensure coordination with the vendors/ technicians/ riggers to ensure that changes are carried as per the change request
- PC8.** ensure change is realized without disruption to the network
- PC9.** ensure continuous monitoring and implement contingency plan in case of service disruption
- PC10.** in case of power capacity upgradation, ensure de-commissioned equipments are returned to the warehouse
- PC11.** ensure compliance with the defined sla for carrying out changes

Test effectiveness & close activity

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

- PC12.** confirm effectiveness of the maintenance process, by monitoring site's alarm status in co-ordination with the noc team
- PC13.** ensure completion of administrative jobs like site clearance, return of test equipments

Health and Safety

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

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- PC14.** ensure compliance with site risk control, ohs, environmental and quality requirements as per company's norms
- PC15.** ensure that work is carried out in accordance to the level of competence and legal requirements
- PC16.** ensure that hazards associated with the workplace that have not been previously controlled, are reported in accordance with appropriate procedures
- PC17.** ensure that personal protection equipments like harness, waist belt are appropriately used as required
- PC18.** ensure availability of first aid box at site
- PC19.** ensure escalation of safety incidents to relevant authorities as per guidelines

Report & Record

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

- PC20.** ensure all relevant parties (including bss/ bts support engineer, noc team, other supervisors) are notified of the results of the change management activities and sign-off is obtained from relevant personnel
- PC21.** ensure that documents that are required to be updated are identified
- PC22.** ensure completion of routine maintenance logs, activity logs and spare tracker within stipulated timelines
- PC23.** ensure that documents are available to all appropriate authorities to inspect

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.** escalation matrix for reporting identified incidents, troubles and/ or emergencies e.g. system failures, fire and power failures
- KU3.** types of documentation in organization and importance of the same
- KU4.** records to be maintained and implications of non-maintenance of the same
- KU5.** process for obtaining sign-off post completion of the maintenance activities
- KU6.** knowledge of spare management and repair & return process for faulty equipments
- KU7.** SHE and OHS guidelines and regulations as per company's norms
- KU8.** protection equipments (harness, belts, helmet, insulation gloves) that are required to be used
- KU9.** first aid requirements in case of electrical shocks, cuts, fall from height and other common injuries
- KU10.** electrical and chemical related hazards and precautionary measures
- KU11.** usage of safety kit for climbing towers
- KU12.** usage of fire safety equipments
- KU13.** functionality of passive infrastructure equipments like dg set, pui panel, transformer, smps, air conditioner, battery bank
- KU14.** need and requirement of earthing the equipments
- KU15.** mechanism to maintain the earthing pit to absolute zero
- KU16.** functionality of tools like pliers, power drill, screwdrivers, spanner

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- KU17.** knowledge of using and deploying cable connectors, cable ties, cable tray
- KU18.** electrical wiring requirements at site and their labeling/ color coding
- KU19.** site power requirements based on equipment rating
- KU20.** power capacities of DG set, battery bank and SMPS based on their models
- KU21.** phase and level of power received from the electrical board

Generic Skills (GS)

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

- GS1.** liaise and coordinate with third party vendors
- GS2.** communicate with supervisor
- GS3.** communicate in the local language
- GS4.** prioritize and execute tasks in a high-pressure environment
- GS5.** multi-task by handling multiple tasks and completing them successfully within due timelines
- GS6.** use and maintain resources efficiently and effectively
- GS7.** be flexible and accept changes in job requirements, schedules, or work environments
- GS8.** interpret reports, readings and numerical data
- GS9.** source technical information by researching manufacturer's technical documentation
- GS10.** create and maintain effective working relationships and team environment
- GS11.** take initiatives and progressively assume increased responsibilities
- GS12.** share knowledge with other team members and colleagues
- GS13.** effectively resolve disputes and manage disagreements
- GS14.** operate passive infrastructure equipments like DG set, PIU panel, Earthing systems, Transformer, SMPS, Air Conditioner, Battery
- GS15.** utilize measurement tools like multi-meter and thermometer to measure voltage levels of battery and site temperatures appropriately
- GS16.** handle and operate tools like pliers, power drill, screwdrivers, sockets, soldering iron, spanner
- GS17.** use appropriate personal protective gear while carrying out activities at sites
- GS18.** utilize connectors, cable ties, cable trays for effective and safe wiring

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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Determine change requirement</i>	30	-	-	-
PC1. receive change requests from the relevant teams (project team/ supervisors)	5	-	-	-
PC2. identify activity type to be performed - hardware upgrade, change of PIU, panels	5	-	-	-
PC3. identify criticality, and timelines for carrying out the changes	5	-	-	-
PC4. develop work plan and identify dependencies, if any	5	-	-	-
PC5. assess the potential impact of the proposed activity and plan for possible outage condition or deferral of the activity	5	-	-	-
PC6. ensure that network operating centre (noc) is notified prior to undertaking the change activities	5	-	-	-
<i>Co-ordinate implementation of upgrade activities</i>	15	5	-	-
PC7. ensure coordination with the vendors/ technicians/ riggers to ensure that changes are carried as per the change request	-	5	-	-
PC8. ensure change is realized without disruption to the network	3	-	-	-
PC9. ensure continuous monitoring and implement contingency plan in case of service disruption	5	-	-	-
PC10. in case of power capacity upgradation, ensure de-commissioned equipments are returned to the warehouse	2	-	-	-
PC11. ensure compliance with the defined sla for carrying out changes	5	-	-	-
<i>Test effectiveness & close activity</i>	10	10	-	-
PC12. confirm effectiveness of the maintenance process, by monitoring site's alarm status in co-ordination with the noc team	5	5	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. ensure completion of administrative jobs like site clearance, return of testequipments	5	5	-	-
<i>Health and Safety</i>	17	3	-	-
PC14. ensure compliance with site risk control, ohs, environmental and qualityrequirements as per company's norms	5	-	-	-
PC15. ensure that work is carried out in accordance to the level of competence andlegal requirements	3	-	-	-
PC16. ensure that hazards associated with the workplace that have not beenpreviously controlled, are reported in accordance with appropriate procedures	3	-	-	-
PC17. ensure that personal protection equipments like harness, waist belt are appropriately used as required	3	-	-	-
PC18. ensure availability of first aid box at site	-	3	-	-
PC19. ensure escalation of safety incidents to relevant authorities as per guidelines	3	-	-	-
<i>Report & Record</i>	8	2	-	-
PC20. ensure all relevant parties (including bss/ bts support engineer, noc team,other supervisors) are notified of the results of the change managementactivities and sign-off is obtained from relevant personnel	2	-	-	-
PC21. ensure that documents that are required to be updated are identified	-	2	-	-
PC22. ensure completion of routine maintenance logs, activity logs and spare trackerwithin stipulated timelines	3	-	-	-
PC23. ensure that documents are available to all appropriate authorities to inspect	3	-	-	-
NOS Total	80	20	-	-

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	TEL/N6102
NOS Name	Undertake upgradation of Passive infrastructure at radio locations
Sector	Telecom
Sub-Sector	Network Managed Services
Occupation	Operation & Maintenance- Passive Infrastructure
NSQF Level	5
Credits	TBD
Version	1.0
Last Reviewed Date	21/06/2018
Next Review Date	31/03/2022
NSQC Clearance Date	20/07/2015

Qualification Pack

TEL/N6103: Undertake other operational activities at radio sites

Description

This unit is about carrying out operational activities at site like ensuring timely diesel filling, obtaining clearances for site, validating accuracy of invoices and ensuring timely payments

Scope

This unit/task covers the following:

- Ensure timely filling of diesel at sites
- Ensure availability of site clearance certificates
- Managing access to the sites
- Validate accuracy of bills and timely payments

Elements and Performance Criteria

Undertake Site operation activities

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

- PC1.** Ensure diesel fillers are deployed at sites to fill diesel in D.G sets as per frequency of filling
- PC2.** Ensure diesel filling activity is monitored closely
- PC3.** Monitor site wise diesel usage to avoid diesel pilferage and/ or excess usage by equipments
- PC4.** Ensure details of diesel filling activity like date and amount of diesel filled are recorded as per company's norms in the required format

Site clearances from authorized personnel

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

- PC5.** obtain list of site clearances that are required to be obtained and the expiry dates of any certificate already obtained
- PC6.** ensure certificates are renewed/obtained from relevant authorities within the due date

Site key management

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

- PC7.** ensure site key management and provide access to the FM engineers and other vendors (post availability of relevant permissions)

Validate accuracy of bills and ensure timely payments

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

- PC8.** obtain site wise EB, Diesel and rent details received from the vendors (invoices/ as per contract) from the supervisors/finance team
- PC9.** ratify the details in the invoice based on site availability, EB and Diesel usage
- PC10.** suggest to appropriate personnel in case of any discrepancies, else confirm accuracy of invoices
- PC11.** ensure in coordination with the finance team that bills are paid on timely basis to avoid late payment charges

Health and Safety

Qualification Pack

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

- PC12.** ensure compliance with site risk control, OHS, environmental and quality requirements as per company's norms
- PC13.** ensure that work is carried out in accordance to the level of competence and legal requirements
- PC14.** ensure that hazards associated with the workplace that have not been previously controlled, are reported in accordance with appropriate procedures
- PC15.** ensure that Personal protection equipment like harness, waist belt is appropriately used as required
- PC16.** ensure availability of first aid box at site
- PC17.** ensure escalation of safety incidents to relevant authorities as per guidelines

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.** Escalation matrix for reporting identified incidents, troubles and/ or emergencies e.g. system failures, fire and power failures
- KU3.** Types of documentation in organization and importance of the same
- KU4.** Records to be maintained and implications of non-maintenance of the same
- KU5.** Process for obtaining sign-off post completion of the maintenance activities
- KU6.** Process for approving access to the sites
- KU7.** SHE and OHS guidelines and regulations as per company's norms
- KU8.** protection equipments (harness, belts, helmet, insulation gloves) that are required to be used
- KU9.** first aid requirements in case of electrical shocks, cuts, fall from height and other common injuries
- KU10.** electrical and chemical related hazards and precautionary measures
- KU11.** usage of fire safety equipments
- KU12.** passive infrastructure equipments like DG set, PIU panel, Earthing systems, Transformer, SMPS, Air Conditioner, Battery
- KU13.** Site power requirements based on equipment rating
- KU14.** power capacities of DG set, battery bank and SMPS based on their models
- KU15.** Phase and level of power received from the electrical board
- KU16.** risk and impact of non availability of EB connection
- KU17.** List of certifications applicable for sites and process of obtaining certificates from the concerned authorities
- KU18.** Calculation of diesel and eb bill amounts based on site usage to ratify vendor invoices
- KU19.** Risk and impact of delayed payment of bills
- KU20.** Performance of site wise diesel usage analysis to detect cases of diesel pilferage

Generic Skills (GS)

Qualification Pack

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

- GS1.** liaise and coordinate with third party vendors
- GS2.** communicate with supervisor
- GS3.** communicate in the local language
- GS4.** prioritize and execute tasks in a high-pressure environment
- GS5.** multi-task by handling multiple tasks and completing them successfully within due timelines
- GS6.** use and maintain resources efficiently and effectively
- GS7.** be flexible and accept changes in job requirements, schedules, or work environments
- GS8.** interpret reports, readings and numerical data
- GS9.** source technical information by researching manufacturer's technical documentation
- GS10.** create and maintain effective working relationships and team environment
- GS11.** take initiatives and progressively assume increased responsibilities
- GS12.** share knowledge with other team members and colleagues
- GS13.** effectively resolve disputes and manage disagreements
- GS14.** calculate diesel and EB bill amounts based on site usage to ratify vendor invoices
- GS15.** perform calculations and ratify vendor invoices based of EB and diesel usage at sites
- GS16.** detect cases of diesel pilferage, by analyzing monthly site wise diesel usage

Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Undertake Site operation activities</i>	18	7	-	-
PC1. Ensure diesel fillers are deployed at sites to fill diesel in D.G sets as per frequency of filling	5	1	-	-
PC2. Ensure diesel filling activity is monitored closely	3	1	-	-
PC3. Monitor site wise diesel usage to avoid diesel pilferage and/ or excess usage by equipments	5	2	-	-
PC4. Ensure details of diesel filling activity like date and amount of diesel filled are recorded as per company's norms in the required format	5	3	-	-
<i>Site clearances from authorized personnel</i>	9	3	-	-
PC5. obtain list of site clearances that are required to be obtained and the expiry dates of any certificate already obtained	3	2	-	-
PC6. ensure certificates are renewed/obtained from relevant authorities within the due date	6	1	-	-
<i>Site key management</i>	4	2	-	-
PC7. ensure site key management and provide access to the FM engineers and other vendors (post availability of relevant permissions)	4	2	-	-
<i>Validate accuracy of bills and ensure timely payments</i>	17	9	-	-
PC8. obtain site wise EB, Diesel and rent details received from the vendors (invoices/ as per contract) from the supervisors/finance team	5	3	-	-
PC9. ratify the details in the invoice based on site availability, EB and Diesel usage	5	4	-	-
PC10. suggest to appropriate personnel in case of any discrepancies, else confirm accuracy of invoices	3	2	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. ensure in coordination with the finance team that bills are paid on timely basis to avoid late payment charges	4	-	-	-
<i>Health and Safety</i>	22	9	-	-
PC12. ensure compliance with site risk control, OHS, environmental and quality requirements as per company's norms	4	2	-	-
PC13. ensure that work is carried out in accordance to the level of competence and legal requirements	3	2	-	-
PC14. ensure that hazards associated with the workplace that have not been previously controlled, are reported in accordance with appropriate procedures	3	2	-	-
PC15. ensure that Personal protection equipment like harness, waist belt is appropriately used as required	4	2	-	-
PC16. ensure availability of first aid box at site	3	1	-	-
PC17. ensure escalation of safety incidents to relevant authorities as per guidelines	5	-	-	-
NOS Total	70	30	-	-

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	TEL/N6103
NOS Name	Undertake other operational activities at radio sites
Sector	Telecom
Sub-Sector	Network Managed Services
Occupation	Operation & Maintenance- Passive Infrastructure
NSQF Level	5
Credits	TBD
Version	1.0
Last Reviewed Date	21/06/2018
Next Review Date	31/03/2022
NSQC Clearance Date	20/07/2015

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.

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/N6100.Perform preventive maintenance of Passive Infrastructure equipment at radio locations	64	36	-	-	100	25
TEL/N6101.Perform corrective maintenance/ fault management of Passive Infrastructure atradio locations	57	43	-	-	100	25
TEL/N6102.Undertake upgradation of Passive infrastructure at radio locations	80	20	-	-	100	25
TEL/N6103.Undertake other operational activities at radio sites	70	30	-	-	100	25
Total	271	129	-	-	400	100

Qualification Pack

Acronyms

NOS	National Occupational Standard(s)
NSQF	National Skills Qualifications Framework
QP	Qualifications Pack
TVET	Technical and Vocational Education and Training
AMF Panel	Auto Man Failure
DG set	Diesel Generator Set
EB connection	Electricity Board Connection
FM Engineer	Field Maintenance Engineer
MCB	Miniature Circuit Breaker
OHS	Organizational Health & Safety
PIU	Power Interface unit
SHE	Safety Health & Environment
SMPS	Switch Mode Power Supply

Qualification Pack

Glossary

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

Qualification Pack

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.

Qualification Pack

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 "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.
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.'



Telecom Infrastructure Engineer

QP Code: TEL/Q6100

Version: 2.0

NSQF Level: 5

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

Qualification Pack

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Qualification Pack

TEL/Q6100: Telecom Infrastructure Engineer

Brief Job Description

An Infrastructure Engineer in the telecom industry is responsible for ensuring site uptime by supervising and monitoring preventive and corrective maintenance of Passive Infrastructure at sites. They also coordinate infrastructure up-gradation activities and ensure timely payments of rent, diesel, and electricity charges after validating the vendor bills.

Personal Attributes

This job requires the individual to work closely with multiple teams and third-party vendors. They should be willing to work in the field and handle high pressure situations. They should be adaptable to changing work environments and possess good practical knowledge so that they can successfully perform the assigned responsibilities.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. [TEL/N6100: Perform Preventive and Corrective Maintenance of Passive Infrastructure Equipment](#)
2. [TEL/N6102: Upgrade Passive Infrastructure at Radio Locations](#)
3. [TEL/N6103: Perform other Operational Activities at Radio Sites](#)
4. [TEL/N9103: Implement Effective Interaction at workplace](#)
5. [TEL/N9104: Manage Work, Resources and Safety at workplace](#)

Qualification Pack (QP) Parameters

Sector	Telecom
Sub-Sector	Passive Infrastructure
Occupation	Operations and Maintenance - Passive Infrastructure
Country	India
NSQF Level	5
Aligned to NCO/ISCO/ISIC Code	NCO-2015/7422.0204

Qualification Pack

Minimum Educational Qualification & Experience	B.E./B.Tech (Science/Electronics/Telecom/IT and other relevant fields) OR Certificate-NSQF (L4) Infrastructure Technician) with 2 Years of experience Passive Infrastructure
Minimum Level of Education for Training in School	
Pre-Requisite License or Training	NA
Minimum Job Entry Age	21 Years
Last Reviewed On	30/12/2021
Next Review Date	30/12/2025
NSQC Approval Date	30/12/2021
Version	2.0
Reference code on NQR	2021/TEL/TSSC/04907
NQR Version	1.0

Qualification Pack

TEL/N6100: Perform Preventive and Corrective Maintenance of Passive Infrastructure Equipment

Description

This OS unit is about carrying out preventive and corrective maintenance activities for passive equipment such as DG sets, battery bank, SMPS etc. to ensure their optimal working.

Scope

The scope covers the following :

- Prepare for preventive and corrective maintenance
- Supervise preventive and corrective maintenance activities
- Report and document the status of site infrastructure

Elements and Performance Criteria

Prepare for preventive and corrective maintenance

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

- PC1.** maintain site details including site listing, Diesel Generator (DG) and power capacity, equipment types and vendors
- PC2.** collect preventive maintenance schedule and the corresponding checklist from the supervisor
- PC3.** analyse the schedule to account for any site criticality, capacity, and frequency faults, if required
- PC4.** notify Network Operation Centre (NOC) team well in advance before commencing maintenance activities
- PC5.** assess network alarm severity, Service Level Agreement (SLAs) and affected network elements
- PC6.** provide information to all relevant parties/stakeholders for identifying the problem and its root cause
- PC7.** prioritize action on alarms based on faults service impact analysis
- PC8.** ensure the team has all necessary tools, test equipment, resources and spare hardware equipment to perform maintenance
- PC9.** raise requests to the vendors for procurement of spares, in case the same are not available in the store, as per company process
- PC10.** arrange for sending parts/components to logistics team for repair and replacement

Supervise preventive and corrective maintenance activities

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

- PC11.** review daily and weekly maintenance activities performed by the technicians
- PC12.** monitor completion of standard maintenance activities, such as checking battery, voltage levels, DG set fuel/oil refill etc.
- PC13.** supervise maintenance and testing activities such as equipment grouting, earthing connections, adequacy of wiring etc.

Qualification Pack

- PC14.** ensure site up-keep by checking for leakages, oil/diesel spillages, condition of cable trays and upkeep of tower (through riggers) etc.
- PC15.** record readings from Power Interface Unit (PIU) panels on input and output voltage and current levels
- PC16.** review third party elements that require maintenance for timely generation of tickets to the respective vendors by Network Operation Center (NOC) team, if required
- PC17.** perform initial diagnostic tests to identify the root cause of the alarm within defined Service Level Agreement (SLA)
- PC18.** analyse the options to rectify the fault and confirm with supervisors, if required
- PC19.** resolve faults pertaining to Auto Main Failure (AMF) panel, alarm panel, Miniature Circuit Breaker (MCB), battery bank, DG set etc.
- PC20.** notify concerned parties about unresolved faults/instances of delays in resolution, as per organisation policy
- PC21.** ensure timely completion of work by monitoring activities performed by riggers and other technicians

Report and document the status of site infrastructure

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

- PC22.** report emergency incidents like passive equipment failures, fire and power failures etc. to the management
- PC23.** ensure completion of administrative jobs like site clearance, return of test equipment etc.
- PC24.** confirm effectiveness of the maintenance process by monitoring site's alarm status in coordination with the NOC team
- PC25.** notify all relevant parties, including Field Maintenance (FM) Engineer, NOC team, supervisors, of the results of the maintenance to obtain sign-off
- PC26.** update relevant documents to be made available for inspection/audit
- PC27.** complete routine maintenance logs, activity logs and spare tracker within stipulated timeline

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** power capacities of DG set, battery bank and Switch Mode Power Supply (SMPS) based on their models
- KU2.** standard preventive maintenance activities carried on site
- KU3.** formats of schedules and checklists
- KU4.** typical faults on site
- KU5.** alarm types, indicators and resolution SLAs/ timelines
- KU6.** alarm criticalities and prioritization
- KU7.** functionality of tools like pliers, power drill, screwdrivers, spanner
- KU8.** inventory management and repair/return process for faulty equipment
- KU9.** process for repair/replacement of parts
- KU10.** risk and impact of deviating from defined procedures/work instructions

Qualification Pack

- KU11.** functionality of passive infrastructure equipment such as DG set, PIU panel, transformer, SMPS, Air Conditioner, battery bank etc.
- KU12.** measurement tools, like multi-meter and thermometer, used to measure voltage levels of battery and site temperatures
- KU13.** need and requirement of earthing the equipment
- KU14.** mechanism for maintaining the earthing pit to absolute zero
- KU15.** electrical wiring requirements at site and their labelling/colour coding
- KU16.** phase and level of power received from the electrical board
- KU17.** site power requirements based on equipment rating
- KU18.** various diagnostic tools
- KU19.** implications for non response to tickets within defined SLAs
- KU20.** escalation matrix for reporting identified incidents, emergencies e.g. system failures, fire and power failures etc.
- KU21.** standard fault-finding (troubleshooting) techniques
- KU22.** process for obtaining sign-off post completion of the maintenance activities
- KU23.** types of documentation in organization and importance of the same
- KU24.** records to be maintained and implications of non-maintenance of the same

Generic Skills (GS)

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

- GS1.** research various sources for information
- GS2.** read and write various documents as per given formats
- GS3.** interact timely with stakeholders
- GS4.** liaise and coordinate with third party vendors
- GS5.** interpret technical data and reports
- GS6.** multi-task various activities
- GS7.** prioritize and execute tasks in a high pressure environment
- GS8.** share knowledge/information timely with other team members and colleagues
- GS9.** take initiatives and progressively assume increased responsibilities

Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Prepare for preventive and corrective maintenance</i>	12	23	-	5
PC1. maintain site details including site listing, Diesel Generator (DG) and power capacity, equipment types and vendors	1	3	-	1
PC2. collect preventive maintenance schedule and the corresponding checklist from the supervisor	1	2	-	-
PC3. analyse the schedule to account for any site criticality, capacity, and frequency faults, if required	2	1	-	-
PC4. notify Network Operation Centre (NOC) team well in advance before commencing maintenance activities	1	2	-	-
PC5. assess network alarm severity, Service Level Agreement (SLAs) and affected network elements	1	3	-	1
PC6. provide information to all relevant parties/stakeholders for identifying the problem and its root cause	1	2	-	-
PC7. prioritize action on alarms based on faults service impact analysis	1	2	-	-
PC8. ensure the team has all necessary tools, test equipment, resources and spare hardware equipment to perform maintenance	1	2	-	1
PC9. raise requests to the vendors for procurement of spares, in case the same are not available in the store, as per company process	1	4	-	1
PC10. arrange for sending parts/components to logistics team for repair and replacement	2	2	-	1
<i>Supervise preventive and corrective maintenance activities</i>	13	26	-	2
PC11. review daily and weekly maintenance activities performed by the technicians	1	1	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. monitor completion of standard maintenance activities, such as checking battery, voltage levels, DG set fuel/oil refill etc.	1	3	-	-
PC13. supervise maintenance and testing activities such as equipment grouting, earthing connections, adequacy of wiring etc.	1	2	-	1
PC14. ensure site up-keep by checking for leakages, oil/diesel spillages, condition of cable trays and upkeep of tower (through riggers) etc.	1	3	-	-
PC15. record readings from Power Interface Unit (PIU) panels on input and output voltage and current levels	1	3	-	-
PC16. review third party elements that require maintenance for timely generation of tickets to the respective vendors by Network Operation Center (NOC) team, if required	1	4	-	1
PC17. perform initial diagnostic tests to identify the root cause of the alarm within defined Service Level Agreement (SLA)	1	2	-	-
PC18. analyse the options to rectify the fault and confirm with supervisors, if required	2	1	-	-
PC19. resolve faults pertaining to Auto Main Failure (AMF) panel, alarm panel, Miniature Circuit Breaker (MCB), battery bank, DG set etc.	1	2	-	-
PC20. notify concerned parties about unresolved faults/instances of delays in resolution, as per organisation policy	1	3	-	-
PC21. ensure timely completion of work by monitoring activities performed by riggers and other technicians	2	2	-	-
<i>Report and document the status of site infrastructure</i>	10	6	-	3
PC22. report emergency incidents like passive equipment failures, fire and power failures etc. to the management	2	1	-	-
PC23. ensure completion of administrative jobs like site clearance, return of test equipment etc.	2	1	-	1

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC24. confirm effectiveness of the maintenance process by monitoring site's alarm status in coordination with the NOC team	1	1	-	-
PC25. notify all relevant parties, including Field Maintenance (FM) Engineer, NOC team, supervisors, of the results of the maintenance to obtain sign-off	2	1	-	1
PC26. update relevant documents to be made available for inspection/audit	2	1	-	-
PC27. complete routine maintenance logs, activity logs and spare tracker within stipulated timeline	1	1	-	1
NOS Total	35	55	-	10

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	TEL/N6100
NOS Name	Perform Preventive and Corrective Maintenance of Passive Infrastructure Equipment
Sector	Telecom
Sub-Sector	Network Managed Services
Occupation	Operations and Maintenance - Passive Infrastructure
NSQF Level	5
Credits	TBD
Version	2.0
Last Reviewed Date	30/12/2021
Next Review Date	30/12/2025
NSQC Clearance Date	30/12/2021

Qualification Pack

TEL/N6102: Upgrade Passive Infrastructure at Radio Locations

Description

This OS unit is about carrying out upgrade activities for passive infrastructure such as enhanced capacity DG set, battery banks, Air Conditioner (AC), power plant etc. at radio locations.

Scope

The scope covers the following :

- Assess up gradation of infrastructure
- Coordinate upgrade activity
- Report and document the status

Elements and Performance Criteria

Assess up gradation of infrastructure

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

- PC1.** analyse change requests received from relevant teams (project team/supervisors)
- PC2.** identify activity type to be performed such as hardware upgrade, change of PIU, panels etc.
- PC3.** analyse criticality and timelines for carrying out the changes
- PC4.** prepare a work plan and identify dependencies, if any
- PC5.** assess the potential impact of the proposed activity and plan for possible outage condition or deferral of the activity
- PC6.** inform the Network Operation Centre (NOC) prior to undertaking the upgradation activity

Co-ordinate upgrade activity

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

- PC7.** coordinate with the vendors/technicians/riggers to ensure that changes are carried as per the change request
- PC8.** ensure change is realized without disruption to the network
- PC9.** monitor continuously and implement contingency plan in case of service disruption
- PC10.** return decommissioned equipment to the warehouse in case of power capacity upgradation
- PC11.** comply with the defined SLA for carrying out changes

Report and document the status

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

- PC12.** ensure completion of administrative jobs like site clearance, return of test equipment etc
- PC13.** confirm effectiveness of the maintenance process, by monitoring site alarm status in coordination with the NOC team
- PC14.** notify all relevant parties about the results of the maintenance result to obtain the sign-off from relevant personnel
- PC15.** identify documents to be updated and to be made available for inspection
- PC16.** complete routine maintenance logs, activity logs and spare tracker within stipulated timeline

Qualification Pack

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** power capacities of DG set, battery bank and SMPS based on their models
- KU2.** functionality of Passive infrastructure equipment like DG set, PIU panel, transformer, SMPS, air conditioner, battery bank
- KU3.** operate passive infrastructure equipment like DG set, PIU panel, transformer, SMPS, air conditioner, battery bank
- KU4.** standard upgradation activities that need to be carried out
- KU5.** knowledge of spare management and repair and return process for faulty equipment
- KU6.** risk and impact of not following defined procedures/work instructions
- KU7.** standard fault-finding (troubleshooting) techniques
- KU8.** process for obtaining sign-off post completion of the maintenance activities
- KU9.** types of documentation in organization and importance of the same
- KU10.** records to be maintained and implications of non-maintenance of the same

Generic Skills (GS)

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

- GS1.** communicate with supervisor
- GS2.** communicate in the local language (preferable)
- GS3.** liaise and coordinate with third party vendors

Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Assess up gradation of infrastructure</i>	16	23	-	3
PC1. analyse change requests received from relevant teams (project team/supervisors)	2	3	-	1
PC2. identify activity type to be performed such as hardware upgrade, change of PIU, panels etc.	2	4	-	-
PC3. analyse criticality and timelines for carrying out the changes	3	4	-	1
PC4. prepare a work plan and identify dependencies, if any	3	4	-	-
PC5. assess the potential impact of the proposed activity and plan for possible outage condition or deferral of the activity	3	4	-	1
PC6. inform the Network Operation Centre (NOC) prior to undertaking the upgradation activity	3	4	-	-
<i>Co-ordinate upgrade activity</i>	12	16	-	4
PC7. coordinate with the vendors/technicians/riggers to ensure that changes are carried as per the change request	2	3	-	-
PC8. ensure change is realized without disruption to the network	1	3	-	1
PC9. monitor continuously and implement contingency plan in case of service disruption	3	2	-	1
PC10. return decommissioned equipment to the warehouse in case of power capacity upgradation	3	4	-	1
PC11. comply with the defined SLA for carrying out changes	3	4	-	1
<i>Report and document the status</i>	7	16	-	3
PC12. ensure completion of administrative jobs like site clearance, return of test equipment etc	2	3	-	1

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. confirm effectiveness of the maintenance process, by monitoring site alarm status in coordination with the NOC team	2	3	-	-
PC14. notify all relevant parties about the results of the maintenance result to obtain the sign-off from relevant personnel	1	3	-	1
PC15. identify documents to be updated and to be made available for inspection	1	3	-	-
PC16. complete routine maintenance logs, activity logs and spare tracker within stipulated timeline	1	4	-	1
NOS Total	35	55	-	10

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	TEL/N6102
NOS Name	Upgrade Passive Infrastructure at Radio Locations
Sector	Telecom
Sub-Sector	Network Managed Services
Occupation	Operations and Maintenance - Passive Infrastructure
NSQF Level	5
Credits	TBD
Version	2.0
Last Reviewed Date	30/12/2021
Next Review Date	30/12/2025
NSQC Clearance Date	30/12/2021

Qualification Pack

TEL/N6103: Perform other Operational Activities at Radio Sites

Description

This OS unit is about carrying out operational activities at site like ensuring timely diesel filling, obtaining clearances for site, validating accuracy of invoices and ensuring timely payments.

Scope

The scope covers the following :

- Undertake site operation activities Report and document the status

Elements and Performance Criteria

Undertake site operation activities

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

- PC1.** supervise deployment of diesel fillers at sites to fill diesel in DG sets as per required frequency of diesel filling
- PC2.** monitor site-wise diesel usage to avoid diesel pilferage and/or excess usage by equipment
- PC3.** prepare a list of site clearances that are required to be obtained and the expiry dates of any certificate already obtained
- PC4.** perform site key management and provide access to the Field Maintenance (FM) Engineers and other vendors (post availability of relevant permissions)

Report and document the status

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

- PC5.** ensure certificates are renewed/obtained from relevant authorities within the due date
- PC6.** record details of diesel filling activity, such as date and amount of diesel filled, as per company norms in the required format
- PC7.** maintain site-wise Electricity Board (EB) connection, diesel and rent details/files received from the vendors (invoices/as per contract) from the supervisors/finance team
- PC8.** verify the details in the invoice based on site availability, electricity and diesel usage
- PC9.** report any discrepancies to appropriate personnel, else confirm accuracy of invoices
- PC10.** supervise coordination with the finance team that bills are paid on timely basis to avoid late payment charges

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** passive infrastructure equipment like DG set, PIU panel, earthing systems, transformer, SMPS, air conditioner, battery
- KU2.** performance of site wise diesel usage analysis to detect cases of diesel pilferage
- KU3.** site power requirements based on equipment rating

Qualification Pack

- KU4.** list of certifications applicable for sites and process of obtaining certificates from the concerned authorities
- KU5.** risk and impact of non availability of EB connection
- KU6.** calculation of diesel and EB bill amounts based on site usage to ratify vendor invoices
- KU7.** risk and impact of delayed payment of bills

Generic Skills (GS)

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

- GS1.** communicate in the local language (preferable)
- GS2.** take initiatives and progressively assume increased responsibilities
- GS3.** communicate with supervisors and other technicians respectfully

Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Undertake site operation activities</i>	12	26	-	4
PC1. supervise deployment of diesel fillers at sites to fill diesel in DG sets as per required frequency of diesel filling	3	6	-	1
PC2. monitor site-wise diesel usage to avoid diesel pilferage and/or excess usage by equipment	2	5	-	1
PC3. prepare a list of site clearances that are required to be obtained and the expiry dates of any certificate already obtained	3	7	-	1
PC4. perform site key management and provide access to the Field Maintenance (FM) Engineers and other vendors (post availability of relevant permissions)	4	8	-	1
<i>Report and document the status</i>	13	39	-	6
PC5. ensure certificates are renewed/obtained from relevant authorities within the due date	2	5	-	1
PC6. record details of diesel filling activity, such as date and amount of diesel filled, as per company norms in the required format	2	6	-	1
PC7. maintain site-wise Electricity Board (EB) connection, diesel and rent details/files received from the vendors (invoices/as per contract) from the supervisors/finance team	2	8	-	1
PC8. verify the details in the invoice based on site availability, electricity and diesel usage	2	7	-	1
PC9. report any discrepancies to appropriate personnel, else confirm accuracy of invoices	2	7	-	1
PC10. supervise coordination with the finance team that bills are paid on timely basis to avoid late payment charges	3	6	-	1
NOS Total	25	65	-	10

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	TEL/N6103
NOS Name	Perform other Operational Activities at Radio Sites
Sector	Telecom
Sub-Sector	Network Managed Services
Occupation	Operations and Maintenance - Passive Infrastructure
NSQF Level	5
Credits	TBD
Version	2.0
Last Reviewed Date	30/12/2021
Next Review Date	30/12/2025
NSQC Clearance Date	30/12/2021

Qualification Pack

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

Qualification Pack

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

Qualification Pack
Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Interact effectively with superiors</i>	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	-	-
<i>Interact effectively with colleagues and customers</i>	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
<i>Respect differences of gender and ability</i>	15	24	-	4
PC12. ensure personal behaviour of self and team is conducted taking gender and disability of the person into consideration	2	4	-	-

Qualification Pack

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

Qualification Pack

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	TBD
Version	1.0
Last Reviewed Date	31/03/2022
Next Review Date	31/03/2026
NSQC Clearance Date	31/03/2022

Qualification Pack

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

Qualification Pack

- 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

Qualification Pack

- 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

Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Manage learning and self-direction</i>	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	-	-
<i>Develop critical thinking and problem solving</i>	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	-	-
<i>Perform work as per quality standards</i>	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
<i>Maintain safe and secure working environment</i>	12	13	-	2
PC11. identify organisation's health, safety, security policies and procedures	3	3	-	-

Qualification Pack

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
<i>Material / energy / electricity conservation practices</i>	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

Qualification Pack

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	TBD
Version	1.0
Last Reviewed Date	31/03/2022
Next Review Date	31/03/2026
NSQC Clearance Date	31/03/2022

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.

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/N6100.Perform Preventive and Corrective Maintenance of Passive Infrastructure Equipment	35	55	0	10	100	20
TEL/N6102.Upgrade Passive Infrastructure at Radio Locations	35	55	0	10	100	20
TEL/N6103.Perform other Operational Activities at Radio Sites	25	65	0	10	100	20
TEL/N9103.Implement Effective Interaction at workplace	30	60	-	10	100	20
TEL/N9104.Manage Work, Resources and Safety at workplace	40	50	-	10	100	20
Total	165	285	-	50	500	100

Qualification Pack

Acronyms

NOS	National Occupational Standard(s)
NSQF	National Skills Qualifications Framework
QP	Qualifications Pack
TVET	Technical and Vocational Education and Training
AMF Panel	Auto Man Failure
DG set	Diesel Generator Set
EB connection	Electricity Board Connection
FM Engineer	Field Maintenance Engineer
MCB	Miniature Circuit Breaker
OHS	Organizational Health & Safety
PIU	Power Interface unit
SHE	Safety Health & Environment
SMPS	Switch Mode Power Supply

Qualification Pack

Glossary

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

Qualification Pack

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.

Qualification Pack

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 "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.
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.'