Model Curriculum

QP Name: Drive Test Engineer

QP Code: TEL/Q6211

QP Version: 3.0

NSQF Level: 5

Model Curriculum Version: 2.0

Telecom Sector Skill Council (TSSC),
Estel House, 3rd Floor, Plot No: - 126, Sector 44
Gurugram, Haryana 122003

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Training Parameters

Sector	Telecom
Sub-Sector	Network Managed Services
Occupation	Network operation and maintenance
Country	India
NSQF Level	5
Aligned to NCO/ISCO/ISIC Code	NCO-2015/7422.3003
Minimum Educational Qualification & Experience	Completed 2nd year of 3-year/ 4-years UG **OR** Pursuing 2nd year of 3-year/ 4-years UG and continuing education **OR** Completed 2nd year of diploma (after 12th) **OR** Pursuing 2nd year of 2-year diploma after 12th with No Experience required **OR** 12th pass with 2 years of any combination of NTC/NAC/CITS or equivalent. With No Experience required **OR** Completed 3-year diploma after 10th **OR** 12th Grade pass with 1-year of NTC/NAC **OR** Completed 1st year of 3-year/ 4-years UG with 1-year relevant experience **OR** Previous relevant Qualification of NSQF Level 4 with 3-year relevant experience
Pre-Requisite License or Training	NA
Minimum Job Entry Age	21 Years
Last Reviewed On	24/02/2022
Next Review Date	24/02/2025
NSQC Approval Date	24/02/2022
Version	3.0
Model Curriculum Creation Date	24/02/2022

Model Curriculum Valid Up to Date	24/02/2025
Model Curriculum Version	2.0
Minimum Duration of the Course	620 Hours, 0 Minutes
Maximum Duration of the Course	620 Hours, 0 Minutes

Program Overview

This section summarizes the end objectives of the program along with its duration.

Training Outcomes

At the end of the program, the learner should have acquired the listed knowledge and skills.

- Inspect tower site and prepare for drive test.
- Measure tower site performance and parameter recording.
- Analyze the report on drive test and prepare the report as per the client/company requirement and take appropriate action.
- Optimize the site and perform troubleshooting based on the report.
- Follow basic health and safety norms and understand the organization procedures.
- Discuss how to plan work effectively, implement safety practices and optimize use of resources
- Demonstrate how to communicate, develop interpersonal skills and become gender and Person with Disability (PwD) sensitive.

Compulsory Modules

The table lists the modules and their duration corresponding to the Compulsory NOS of the QP.

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
Bridge Module	**20:00**	**10:00**	**00:00**	-	**30:00**
Module 1: Role and Responsibilities of a Drive Test Engineer – Bridge Module	20:00	10:00	00:00	-	30:00
TEL/N6237 – Tower site verification and preparation for drive test **NOS Version No. 2.0** **NSQF Level 5**	**40:00**	**60:00**	**20:00**	-	**120:00**
Module 2: Tower site verification and preparation for drive test	40:00	60:00	20:00	-	120:00
TEL/N6238 – Tower site performance measurement and parameter recording **NOS Version No. 2.0** **NSQF Level 5**	**40:00**	**60:00**	**20:00**	-	**120:00**
Module 3: Tower site performance measurement and parameter recording	40:00	60:00	20:00	-	120:00

TEL/N6239 – Tower site data analysis and reporting **NOS Version No. 2.0** **NSQF Level 5**	**30:00**	**50:00**	**40:00**	-	**120:00**
Module 4: Tower site data analysis and reporting	30:00	50:00	40:00	-	120:00
TEL/N6240 – Tower Site Optimization and troubleshooting **NOS Version No. 2.0** **NSQF Level 5**	**60:00**	**50:00**	**40:00**	-	**150:00**
Module 5: Tower Site Optimization and troubleshooting	60:00	50:00	40:00	-	150:00
TEL/N9103 – Implement Effective Interaction at workplace **NOS Version No. 1.0** **NSQF Level 5**	**10:00**	**20:00**	**00:00**	-	**30:00**
Module 6: Communication and Interpersonal skills	10:00	20:00	00:00	-	30:00
TEL/N9104 – Manage Work, Resources and Safety at workplace **NOS Version No. 1.0** **NSQF Level 5**	**10:00**	**20:00**	**00:00**	**-**	**30:00**
Module 7: Working effectively and optimizing resources for a safe workplace	10:00	20:00	00:00	-	30:00
DGT/VSQ/N0102 Employability Skills (60 Hours)	60:00	00:00	00:00	00:00	60:00
Total Duration	**270:0**	**270:0**	**120:00**	**00:00**	**660:00**

Module Details

Module 1: Role and Responsibilities of a Drive Test Engineer
Bridge Module

Terminal Outcomes:

- Identify the role and responsibilities of a Drive Test Engineer.

Duration: *20:00*	Duration: *10:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
- Describe the size and scope of the Telecom industry and its various sub-sectors. - Summarize the history of telecom sector evolution - Distinguish the various segments of telecom sector i.e., passive infra and active networks - Categorize different technologies based on architecture - 2G GSM, 3G, 4G/VoLTE network - Illustrate the spectrum usage in telecom sector	- Demonstrate the importance of various active and passive components /Equipment - Classify the various logic channels in the active networks - Explain the call flow process in 2G, 3G and 4G - Make use of knowledge on AMT (Amplifier Mount Trans receiver)
Classroom Aids:	
Laptop with software like MS Office and internet, white board, marker, projector	
Tools, Equipment and Other Requirements	

Module 2: Tower site verification and preparation for drive test
Mapped to TEL/N6237 v2.0

Terminal Outcomes:

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

Duration: *40:00*	Duration: *60:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Categorize tower types - GBT (Ground Base Tower), RTT (Roof Top Tower), COW (Coverage on wheel) and RTP (Roof Top Pole) • Understand the principle of directional antennas, sectorization, tilting (E/M), frequency bands, GSM architecture • Distinguish different types of telecom towers (GBT, RTT, Pole) • Explain the functionalities of AMT (Amplifier Mount Transceiver), passive infrastructure equipment on site (e.g.: DG, PIU, SMPS, Tower, Cables, shelter, etc.)	• Demonstrate the functionality of tools like GPS, Magnetic compass, laptop, MapInfo software, MCOM software, PowerPoint software, Google earth etc. • Demonstrate the passive network components/equipment – DG, SMPS, PIU, Battery bank, shelter, Air conditioner, roster, internal and external earthing at the site, feeder, and jumper cable. • Verify the tower ID, cell ID, antenna height and tilt (electrical and mechanical), sector swap, antenna orientation/azimuth. • Demonstrate the use of various equipment/tools to measure/perform during the site audit.

Classroom Aids:
Whiteboard and markers, chart paper and sketch pens, LCD Projector and Laptop for presentations

Tools, Equipment and Other Requirements
GPS (Global Positioning Satellite), Binocular, magnetic compass, camera, measuring tape (50meter), antenna alignment tools

Module 3: Tower site performance measurement and parameter recording

Mapped to TEL/N6238 v2.0

Terminal Outcomes:

- Plan area, routes & schedule for conducting drive test
- Onsite activity
- Fault identification and rectification

Duration: *40:00*	Duration: *60:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
- Classify the active network equipment – BTS (Base Trans receiver Station), microwave propagation, IF cable and different types of GSM & microwave antenna - Outline the drive test path of the site - Construct log files for dropped calls, blocked calls, handover failures, TA, and inter-connectivity between GSM/ UMTS/ LTE/VoLTE	- Perform clockwise and anti-clockwise handover drive - Check the feeder cable swap - Perform a benchmark/cluster/data /handover drive test - Create log files for short calls and long calls separately. - Identify the faults and rectify it. - Escalate the issues (if required) and report accordingly.

Classroom Aids:
Whiteboard and markers, chart paper and sketch pens, LCD Projector and Laptop for presentations

Tools, Equipment and Other Requirements
Laptop with TEMS Software or compatible software, data card, magnetic GPS/Gramin 72, a handset (e.g., Sony W995) compatible with software (MapInfo, Google Map)

Module 4: Tower site data analysis and reporting
Mapped to TEL/N6239 v2.0

Terminal Outcomes:
- Analyze drive test report
- Reporting and documenting the status

Duration: *30:00*	Duration: *50:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
- Describe telecom technology (2G, 3G and 4G/5G) - Distinguish different types of antennas and coverage pattern - List the record of faults on sites visited and rectify the related issues - Generate performance report covering – vector map, cell site details, export of log files - Prepare technical documentation on the different parameters recorded	- Examine the 2G parameters – Rx level, Rx Quality, C/I, SQI, UL/DL throughput - Examine the 3G parameters – RSCP, EC/No, RSSI, SC, CQI, UL/DL throughput - Examine the 4G/VoLTE parameters – RSRP, RSRQ, PCI, SINR, UL/DL throughput, MO/MT, AT/DT, ping testing - Examine parameters common to 2G/3G/4G – coverage, neighbor site handover, call drop, KPI analysis - Demonstrate the effect of various parameters on antenna coverage - Illustrate the types and reasons for faults and corrective measures

Classroom Aids:
Whiteboard and markers, chart paper and sketch pens, LCD Projector and Laptop for presentations

Tools, Equipment and Other Requirements
Laptop with TEMS Software/ other compatible Software, Dongle and MapInfo

Module 5: Tower Site Optimization and troubleshooting
Mapped to TEL/N6240 v2.0

Terminal Outcomes:
- Coordinating activities for performing physical optimization and troubleshooting

Duration: *60:00*	Duration: *50:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Examine the site optimization parameters at antenna end – azimuths, antenna tilts (E/M), antenna height and orientation • Compare and change (if required) certain parameters from NOC – Broadcast channel, Traffic channel number, cell ID, time slot etc. • Optimize the cells cluster-wise • Implement corrective actions based on cell parameters	• Establish the effect of antenna tilt, direction, azimuth and height on performance (BTS, NodeB, eNodeB) • Examine site performance parameters and their optimal values • Demonstrate the effects of obstructions on tower site performance • Perform corrective and mitigating actions to improve site performance • Demonstrate operation and troubleshooting of site equipment required for Drive Test (GPS, Handset, car charger, dongle, mouse, Data Card)
Classroom Aids:	
Whiteboard and markers, chart paper and sketch pens, LCD Projector and Laptop for presentations	
Tools, Equipment and Other Requirements	
Laptop with TEMS Software/ other compatible Software, Dongle and MapInfo	

Module 6: Communication and Interpersonal skills
Mapped to TEL/N9103 v1.0

Terminal Outcomes:

- Communicate effectively and develop interpersonal skills
- Develop sensitivity towards differently abled people.

Duration: *10:00*	Duration: *20:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
- Identify roles and responsibilities and understand organisation's policies. - List organisational guidelines for dress code, time schedules, language and other soft skill aspects. - List the different methods of communication. - Explain the importance of effective communication and interpersonal skills. - Analyse the common reasons for interpersonal conflicts and ways of managing them effectively. - Identify types of information needed by colleagues and its importance. - Identify the need for implementing standards, guidelines and practices pertaining to gender sensitivity, including work ethics and workplace etiquettes. - Explain the work ethics, workplace etiquettes as well as standards and guidelines for all genders and PwD. - List health and safety requirements for persons with disability. - List the rights, duties and benefits available at workplace for person with disability. - Identify the process of recruiting people with disability for a specific job. - Analyse the specific ways to help persons with disability overcome the challenges.	- Demonstrate how to interact with superiors in terms of escalating problems, reporting work completion and receiving feedback. - Apply team building skills to assist colleagues in maximizing effectiveness and efficiency of carrying out tasks. - Demonstrate appropriate communication skills and etiquettes while interacting with others. - Resolve conflicts with colleagues and adhere to commitment. - Demonstrate ideal workplace ethics while interacting with colleagues with respect to sharing information, co-ordinating work and showing respect. - Follow organisation's policy for working with team members. - Illustrate importance of team goals over individual goals. - Use inclusive language irrespective of the gender/ disability of the person. - Demonstrate appropriate behaviour towards all genders and differently abled people.
Classroom Aids:	
White board/ black board marker / chalk, duster, computer or Laptop attached to LCD projector	
Tools, Equipment and Other Requirements	
Sample of escalation matrix, organisation structure.	

Module 7: Working effectively and optimizing resources for a safe workplace
Mapped to TEL/N9104 v 1.0

- Plan work effectively, implement safety practices and optimize use of resources

Duration: *10:00*	**Duration**: *20:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
- List the importance of following the standard operating procedures of the company w.r.t. privacy, confidentiality and security. - List the key performance indicators for the new tasks. - Identify the opportunities for team building workshops and motivational trainings. - List and explain work requirements to be followed by the team. - Identify the issues with and handle them. - Discuss correct way to show emotions at workplace. - Describe the importance of timely completion of tasks. - Explain the importance of escalation matrix. - Explain the importance of providing and receiving feedback constructively. - Analyse ways to optimize usage of resources. - List the importance, cause and effect of greening of jobs. - Identify different types of hazards such as illness, accidents, fires etc. - List the causes of risks and potential hazards in a work area and ways to prevent them. - List the steps to report accident and health related issues as per SOP. - Explain the concept of waste management. - List the methods of waste disposal. - Identify the different categories of waste for the purpose of segregation. - Differentiate between recyclable and non-recyclable waste.	- Demonstrate techniques to save on cost and time. - Demonstrate routine cleaning of tools, equipment and machines to ensure team follows the same. - Use resources such as water judiciously. - Check for malfunctions in equipment and report as per SOP. - Report any breaches in safety and security to the concerned person. - Illustrate ways to keep work area clean such as mopping spills and leaks, cleaning grease stains etc. - Check for spills and leaks and plug the same. - Demonstrate segregation of types of hazardous waste. - Illustrate steps to minimize waste. - Illustrate proper waste disposal procedures and how to dispose-off hazardous waste. - Illustrate ways to find exact cause of a problem and validate the same in case done by a team member.

| • List electronic waste disposal procedures. | |

Classroom Aids:

White board/ black board marker / chalk, duster, computer or Laptop attached to LCD projector

Tools, Equipment and Other Requirements

Personal Protection Equipment: safety glasses, head protection, rubber gloves, safety footwear, warning signs and tapes, fire extinguisher and first aid kit

Mandatory Duration: *120:00*	**Recommended Duration**: *00:00*
Location: On-Site	

Terminal Outcomes

1. Functionality of tools like GPS, Magnetic compass, laptop, MapInfo software, MCOM software, PowerPoint software, Google earth
2. Principle of directional antennas, sectorization, tilting (E/M), frequency bands, GSM architecture
3. Types of telecom towers (GBT, RTT, Pole)
4. Knowledge of AMT (Amplifier Mount Transceiver)
5. Knowledge of passive infrastructure on site. (DG, PIU, SMPS, Tower, Cables, shelter etc.
6. Troubleshooting technique for laptop, GPS, Mobile phone, software, dongle
7. Principle of directional antennas, sectorization, tilting (E/M), frequency bands, GSM architecture
8. Fundamentals of GSM, UMTS, LTE network elements.
9. Functionality and operations of BTS
10. Types of antennas and its radiation pattern
11. Basic concepts of handovers, frequency reuse, scrambling codes, PCI, GSM channels, UMTS & LTE channels, interference, types of interferences, Signal strength, power, unit conversion
12. Call drop reasons, handover failure reasons, poor coverage problem, swapping
13. Telecom technology (2G, 3G and 4G/LTE/volte)
14. Types of antennas and coverage pattern
15. Effect of various parameters on antenna coverage
16. Types and reasons for faults and corrective measures
17. Technical documentation
18. Effects of antenna tilt, direction, azimuth, and height on performance (BTS, NodeB, eNodeB)
19. Site performance parameters and their optimal values
20. Effects of obstructions on tower site performance
21. Corrective and mitigating actions to improve site performance
22. Operation and troubleshooting of site equipment (GPS, handset, car charger, dongle, mouse, data card)

Module 9: DGT/VSQ/N0102 Employability Skills (60 hours)
Mapped to Drive Test Engineer

Mandatory Duration: *60:00*

Location: On-Site

S.No	Module Name	Key Learning Outcomes	Duration (hours)
1.	Introduction to Employability Skills	• Discuss the Employability Skills required for jobs in various industries. • List different learning and employability related GOI and private portals and their usage.	1.5
2.	Constitutional values - Citizenship	• Explain the constitutional values, including civic rights and duties, citizenship, responsibility towards society and personal values and ethics such as honesty, integrity, caring and respecting others that are required to become a responsible citizen. • Show how to practice different environmentally sustainable practices.	1.5
3.	Becoming a Professional in the 21st Century	• Discuss importance of relevant 21st century skills. • Exhibit 21st century skills like Self-Awareness, Behavior Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn etc. in personal or professional life. • Describe the benefits of continuous learning.	2.5
4.	Basic English Skills	• Show how to use basic English sentences for every day. conversation in different contexts, in person and over the telephone. • Read and interpret text written in basic English • Write a short note/paragraph / letter/e -mail using basic English.	10
5.	Career Development & Goal Setting	• Create a career development plan with well-defined short- and long-term goals.	2
6.	Communication Skills	• Demonstrate how to communicate effectively using verbal and nonverbal communication etiquette. • Explain the importance of active listening for effective communication. • Discuss the significance of working collaboratively with others in a team.	5
7.	Diversity & Inclusion	• Demonstrate how to behave, communicate, and conduct oneself appropriately with all genders and PwD. • Discuss the significance of escalating sexual harassment issues as per POSH act.	2.5
8.	Financial and Legal Literacy	• Outline the importance of selecting the right financial institution, product, and service. • Demonstrate how to carry out offline and online financial transactions, safely and securely. • List the common components of salary and compute income, expenditure, taxes, investments etc. • Discuss the legal rights, laws, and aids.	5

9.	Essential Digital Skills	• Describe the role of digital technology in today's life. • Demonstrate how to operate digital devices and use the associated applications and features, safely and securely. • Discuss the significance of displaying responsible online behavior while browsing, using various social media platforms, e-mails, etc., safely and securely. • Create sample word documents, excel sheets and presentations using basic features. • Utilize virtual collaboration tools to work effectively.	10
10.	Entrepreneurship	• Explain the types of entrepreneurship and enterprises. • Discuss how to identify opportunities for potential business, sources of funding and associated financial and legal risks with its mitigation plan. • Describe the 4Ps of Marketing-Product, Price, Place and Promotion and apply them as per requirement. • Create a sample business plan, for the selected business opportunity.	7
11	Customer Service	• Describe the significance of analyzing different types and needs of customers. • Explain the significance of identifying customer needs and responding to them in a professional manner. • Discuss the significance of maintaining hygiene and dressing appropriately.	5
12	Getting Ready for Apprenticeship & Jobs	• Create a professional Curriculum Vitae (CV). • Use various offline and online job search sources such as employment exchanges, recruitment agencies, and job portals respectively. • Discuss the significance of maintaining hygiene and confidence during an interview. • Perform a mock interview. • List the steps for searching and registering for apprenticeship opportunities.	8

LIST OF TOOLS & EQUIPMENT FOR EMPLOYABILITY SKILLS		
S No.	**Name of the Equipment**	**Quantity**
1.	Computer (PC) with latest configurations – and Internet connection with standard operating system and standard word processor and worksheet software (Licensed) (all software should either be latest version or one/two version below)	As required
2.	UPS	As required
3.	Scanner cum Printer	As required
4.	Computer Tables	As required
5.	Computer Chairs	As required
6.	LCD Projector	As required
7.	White Board 1200mm x 900mm	As required
Note: Above Tools &Equipment not required, if Computer LAB is available in the institute.		

Annexure

Trainer Requirements (Drive Test Engineer)

Trainer Prerequisites						
Minimum Educational Qualification	**Specialization**	**Relevant Industry Experience**		**Training Experience**		**Remarks**
		Years	*Specialization*	*Years*	*Specialization*	
B.E./B.Tech	Electronics/Telecom/IT and other related fields	2	Active Telecom Network Domain	0	NA	Eligible for ToT Program
BCA/B.Sc.	Computer Science/IT and other relevant fields	3	Active Telecom Network Domain	0	NA	Eligible for ToT Program

Trainer Certification	
Domain Certification	**Platform Certification**
Certified in Job Role: "**Drive Test Engineer**" "**TEL/Q6211 v3.0**" NSQF Level 5, Minimum accepted score is **80%**	Certified in Job Role: "**Trainer (VET and Skills)**" "**MEP/Q2701**" **v2.0**, Minimum acceptedscore is **80%**

Assessor Requirements (Drive Test Engineer)

Assessor Prerequisites						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training Experience		Remarks
		Years	*Specialization*	*Years*	*Specialization*	
B.E./B.Tech	Electronics/Telecom/IT and other related fields	2	Active Telecom Network Domain	0	NA	Eligible for ToA Program
BCA/B.Sc.	Computer Science/IT and other relevant fields	3	Active Telecom Network Domain	0	NA	Eligible for ToA Program

Assessor Certification	
Domain Certification	**Platform Certification**
Certified in Job Role: "**Drive Test Engineer**" "**TEL/Q6211 v3.0**" NSQF Level 5, Minimum accepted score is **80%**	Certified in Job Role: "**Assessor (VET and Skills)**" "**MEP/Q2701" v2.0**, Minimum acceptedscore is **80%**

Trainer Requirements (Employability Skills 60 hours)

Trainer Prerequisites					
Minimum Educational Qualification	**Specialization**	**Relevant Industry Experience**		**Training Experience**		**Remarks**
		Years	*Specialization*	*Years*	*Specialization*	
Graduate/CITS	Any discipline			2	Teaching experience	Prospective ES trainer should:
Current ITI trainers	Employability Skills Training (3 days full-time course done between 2019-2022)					• have good communication skills
Certified current EEE trainers (155 hours)	from Management SSC (MEPSC)					• be well versed in English • have digital skills • have attention to detail • be adaptable
Certified Trainer	Qualification Pack: Trainer (MEP/Q0102)					• have willingness to learn

Trainer Certification	
Domain Certification	**Platform Certification**
Certified in 60-hour Employability NOS (2022), with a minimum score of 80% OR Certified in 120-, 90-hour Employability NOS (2022), with a minimum score of 80%	NA

Master Trainer Requirements (Employability Skills 60 hours)

Master Trainer Prerequisites					
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training Experience		Remarks
		Years	Specialization	Years	Specialization	
Graduate/CITS	Any discipline			3	Employability Skills curriculum training experience with an interest to train as well as orient other peer trainers	Prospective ES Master trainer should: • have good communication skills • be well versed in English • have basic digital skills • have attention to detail • be adaptable • have willingness to learn • be able to grasp concepts fast and is creative with teaching practices and likes sharing back their learning with others
Certified Master Trainer	Qualification Pack: Master Trainer (MEP/Q2602			3	EEE training of Management SSC (MEPSC) (155 hours)	

Master Trainer Certification	
Domain Certification	Platform Certification
Certified in 60-hour Employability NOS (2022), with a minimum score of **90%.** **OR** Certified in 120-, 90-hour Employability NOS (2022), with a minimum score of **90%**	NA

Assessment Strategy

1. Assessment System Overview:
   - Batches assigned to the assessment agencies for conducting the assessment on SDSM/SIP or email
   - Assessment agencies send the assessment confirmation to VTP/TC looping SSC
   - Assessment agency deploys the ToA certified Assessor for executing the assessment
   - SSC monitors the assessment process & records

2. Testing Environment:
   - Confirm that the centre is available at the same address as mentioned on SDMS or SIP
   - Check the duration of the training.
   - Check the Assessment Start and End time to be as 10 a.m. and 5 p.m.
   - If the batch size is more than 30, then there should be 2 Assessors.
   - Check that the allotted time to the candidates to complete Theory & Practical Assessment is correct.
   - Check the mode of assessment—Online (TAB/Computer) or Offline (OMR/PP).
   - Confirm the number of TABs on the ground are correct to execute the Assessment smoothly.
   - Check the availability of the Lab Equipment for the particular Job Role.

3. Assessment Quality Assurance levels / Framework:
   - Question papers created by the Subject Matter Experts (SME)
   - Question papers created by the SME verified by the other subject Matter Experts
   - Questions are mapped with NOS and PC
   - Question papers are prepared considering that level 1 to 3 are for the unskilled & semi-skilled individuals, and level 4 and above are for the skilled, supervisor & higher management
   - Assessor must be ToA certified & trainer must be ToT Certified
   - Assessment agency must follow the assessment guidelines to conduct the assessment

4. Types of evidence or evidence-gathering protocol:
   - Time-stamped & geotagged reporting of the assessor from assessment location
   - Center photographs with signboards and scheme specific branding
   - Biometric or manual attendance sheet (stamped by TP) of the trainees during the training period
   - Time-stamped & geotagged assessment (Theory + Viva + Practical) photographs & videos

5. Method of verification or validation:
   - Surprise visit to the assessment location
   - Random audit of the batch
   - Random audit of any candidate

6. Method for assessment documentation, archiving, and access
   - Hard copies of the documents are stored
   - Soft copies of the documents & photographs of the assessment are uploaded / accessed from Cloud Storage
   - Soft copies of the documents & photographs of the assessment are stored in the Hard Drives

Assessment Strategy (Employability Skills 60 hours)

The trainee will be tested for the acquired skill, knowledge and attitude through formative/summative assessment at the end of the course and as this NOS and MC is adopted across sectors and qualifications, the respective AB can conduct the assessments as per their requirements.

References

Glossary

Term	Description
Declarative Knowledge	Declarative knowledge refers to facts, concepts and principles that need to be known and/or understood in order to accomplish a task or to solve a problem.
Key Learning Outcome	Key learning outcome is the statement of what a learner needs to know, understand and be able to do in order to achieve the terminal outcomes. A set of key learning outcomes will make up the training outcomes. Training outcome is specified in terms of knowledge, understanding (theory) and skills (practical application).
OJT (M)	On-the-job training (Mandatory); trainees are mandated to complete specified hours of training on site
OJT (R)	On-the-job training (Recommended); trainees are recommended the specified hours of training on site
Procedural Knowledge	Procedural knowledge addresses how to do something, or how to perform a task. It is the ability to work, or produce a tangible work output by applying cognitive, affective or psychomotor skills.
Training Outcome	Training outcome is a statement of what a learner will know, understand and be able to do **upon the completion of the training**.
Terminal Outcome	Terminal outcome is a statement of what a learner will know, understand and be able to do **upon the completion of a module.** A set of terminal outcomes help to achieve the training outcome.

Acronyms and Abbreviations

Term	Description
QP	Qualification Pack
NSQF	National Skills Qualification Framework
NSQC	National Skills Qualification Committee
NOS	National Occupational Standards
SOP	Standard Operating Procedures
CRM	Customer Relationship Management
AT	Acceptance Test
DG	Diesel Generator
PIU	Power Interface Unit
SMPS	Switch Mode Power Supply
FTP	File Transfer Protocol
BSC	Base Station Controller
AMF	Auto Man Failure
PPE	Personal Protective Equipment
FM	Field Maintenance
PwD	Persons with Disabilities
EB	Electricity Board
MCB	Miniature Circuit Breaker
NOC	Network Operating Centre
SLA	Service Level Agreement
PM	Preventive Maintenance
CM	Corrective Maintenance
TRX	Transceiver
NMS	Network Monitoring System
MOP	Maintenance Operation Protocol
ES	Employability Skills