Model Curriculum

QP Name: Telecom Infrastructure Engineer

QP Code: TEL/Q6100

QP Version: 3.0

NSQF Level: 5

Model Curriculum Version: 2.0

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

Table of Contents

Training 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
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** Previous relevant Qualification of NSQF Level 4 with 3-year relevant experience
Pre-Requisite License or Training	Technical training on Passive Infrastructure equipment deployed at radio sites
Minimum Job Entry Age	21 Years
Last Reviewed On	30/12/2021
Next Review Date	30/12/2024
NSQC Approval Date	30/12/2021
QP Version	3.0
Model Curriculum Creation Date	30/12/2021
Model Curriculum Valid Up to Date	30/12/2024
Model Curriculum Version	2.0
Minimum Duration of the Course	540 Hours, 0 Minutes
Maximum Duration of the Course	540 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.

- Perform preventive and corrective maintenance at site
- Perform upgradation of passive infrastructure
- Perform other operational activities at site
- Plan work effectively, implement safety practices and optimize use of resources
- Communicate, develop interpersonal skills and develop sensitization towards gender and persons with disability

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**	**00:00**	**30:00**
Role and Responsibilities of an infrastructure engineer Module 1	20:00	10:00	00:00	00:00	30:00
TEL/N6100 – Perform preventive and corrective maintenance of passive infrastructure equipment **NOS Version No. 1.0** **NSQF Level 5**	**50:00**	**60:00**	**40:00**	**00:00**	**150:00**
Module 2: Maintain passive infrastructure equipment	50:00	60:00	40:00	00:00	150:00
TEL/N6102 – Upgrade passive infrastructure at radio locations **NOS Version No. 1.0** **NSQF Level 5**	**30:00**	**50:00**	**40:00**	**00:00**	**120:00**
Module 3: Upgrade passive infrastructure	30:00	50:00	40:00	00:00	120:00
TEL/N6103 – Perform other operational activities at radio sites **NOS Version No. 1.0** **NSQF Level 5**	**30:00**	**50:00**	**40:00**	**00:00**	**120:00**

Module 4: Perform operational activities at radio sites	30:00	50:00	40:00	00:00	120:00
TEL/N9103 – Implement effective interaction at workplace **NOS Version No. 1.0** **NSQF Level 5**	**10:00**	**20:00**	**00:00**	**00:00**	**30:00**
Module 5: Communication and Interpersonal skills	10:00	20:00	00:00	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**	**00:00**	**30:00**
Module 6: Working effectively and optimizing resources for a safe workplace	10:00	20:00	00:00	00:00	30:00
DGT/VSQ/N0102 Employability Skills (60 Hours)	60:00	00:00	00:00	00:00	60:00
Total Duration	**210:00**	**210:00**	**120:00**	**00:00**	**540:00**

Module Details

Module 1: Role and Responsibilities of an Infrastructure Engineer

Mapped to Bridge Module

Terminal Outcomes:

- Identify the role and responsibilities of infrastructure engineer

Duration: *20:00*	**Duration**: *10:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain the role and responsibilities of infrastructure engineer • Describe the various electrical and electronic components. • Prepare a list of the standard operating procedures (SOP) to be followed for use of tools and equipment, service and minor repairs. • Discuss the documentation involved in the different processes of maintenance. • State the safety, health and environmental policies and regulations for the work place as well as for telecom sites in general.	• Prepare the schedule for carrying out inspection and repairs of the tools, equipment to maintain site. • Guide about the standard checklists and schedules to engineers and workers recommended by the operating companies (OPCOs). • Arrange and use the tools and equipment required for site maintenance
Classroom Aids:	
Whiteboard and Markers Chart paper and sketch pens LCD Projector and Laptop for presentations	
Tools, Equipment and Other Requirements	
Labs equipped with the following: PCs/Laptops Internet with Wi-Fi (Min 2 Mbps Dedicated) Documents of standard operating procedures, code of conduct, checklists, schedules tools and equipment, status report	

Module 2: Perform Preventive and Corrective Maintenance of Passive Infrastructure Equipment

Mapped to TEL/N6100, v2.0

Terminal Outcomes:

- Perform preventive maintenance
- Perform corrective maintenance
- Arrange tools and spares
- Record and document maintenance status

Duration: *50:00*	**Duration: *60:00***
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Define and explain the need for preventive maintenance of key equipment like AC, DG, PIU, SMPS and battery bank vis-à-vis each of their functionality • State the standard preventive maintenance activities carried on site as per the organization guidelines • Explain the commonly occurring faults related to site criticality, capacity, and frequency and their diagnostic procedure • Strategize priority actions based on the criticality of impact • State the purpose of earthing, its methods, alternatives and importance of maintaining earthing pit to absolute zero after checking earthing connections • Discuss the factors be considered while performing site up-keep activities. • Summarize the factors to conduct timely review of third party elements • Discuss the process of conducting periodic review of preventive maintenance carried out by the technicians • • Suggest some ways to resolve issues within the defined Service Level Agreement (SLAs)	• Identify different types of electrical wires, their labels and codes • Demonstrate the functioning of site equipment such as AC, DG, PIU, /SMPS /IPMS and battery bank • Collect preventive maintenance schedule/checklist from the supervisor • Arrange and use mechanical tools and equipment required for site maintenance • Perform root cause analysis for recurring faults. • Monitor maintenance activities of AC, DG, PIU, /SMPS /IPMS and battery bank • Replace a defective or faulty part/equipment • Perform testing activities such as equipment grouting and earthing • Perform initial diagnostic tests to carry out corrective maintenance of the equipment • Check for leakages, oil/diesel spillages, condition of cable trays, adequacy of wiring and upkeep of tower (through riggers) • Calculate the power requirements of the site based on equipment rating • Prepare a sheet of recorded voltage and current readings from Power Interface Unit (PIU) • Perform compliance audit process to review performance of technicians and vendors. • Resolve faults pertaining to Auto Man Failure (AMF) panel, alarm panel, Miniature Circuit Breaker (MCB), battery bank, DG set etc.

	• Monitor the usage of energy and take steps to reduce it • Check for basic requirements such as engine oil, voltage, loose connections, cable heating etc. • Report emergency incidents like passive equipment failures, fire and power failures etc. to the management • Demonstrate how to fill out formats/checklists for preventive maintenance/repair of equipment. • Use basic computer applications such as MS Excel, CRM etc.
Classroom Aids:	
Whiteboard and Markers Chart paper and sketch pens LCD Projector and Laptop for presentations	
Tools, Equipment and Other Requirements	
Network cables, electrical wires, alarms, indicators, tools and equipment, AC, DG, PIU, SMPS and battery bank, Auto Man Failure (AMF) panel, alarm panel, tools like pliers, power drill, screwdrivers, spanner, measurement tools, like multi-meter and thermometer, diagnostic tools Sample of preventive and corrective maintenance formats and checklists Laptop with software such as MS Office and CRM	

Module 3: Upgrade Passive Infrastructure at Radio Locations

Mapped to TEL/N6102, v2.0

Terminal Outcomes:

- Analyse need for upgradation
- Perform upgradation of passive infrastructure
- Record the upgradation status

Duration: *30:00*	**Duration: *50:00***
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Discuss the factors to be considered to analyse the upgradation need of infrastructure • Categorize the different types of upgradation activities such as hardware upgrade, equipment replacement etc. • Describe the importance of prioritizing activities based on criticality and timelines • Strategize timely coordination with stakeholders such as vendors/technicians/Network Operating Centre (NOC) for carrying out upgradation activities • State the importance of carrying out changes as per the defined Service Level Agreement (SLAs) • Suggest the factors to be considered while confirming the effectiveness of the up gradation • Explain the process of obtaining sign-off from all concerned parties after the completion of the maintenance activities	• Prepare a complete work plan for different upgradation activities of infrastructure • Evaluate the costs and results of different upgradation activities beforehand • Prepare a contingency plan to be implemented in case of any service disruption • Monitor upgradation activities and ensure their successful & timely completion • Prepare a checklist of the tasks to be performed in case of power capacity generation • Supervise the successful conduct of administrative tasks post up gradation activities • Conduct a visual inspection of the site to report the maintain effectiveness to all the relevant stakeholders • Demonstrate the process of maintaining log card compliance and activity logs. • Maintain and update records/ documents related to upgradation of equipment
Classroom Aids:	
Whiteboard and Markers Chart paper and sketch pens LCD Projector and Laptop for presentations	
Tools, Equipment and Other Requirements	
Network cables, electrical wires, alarms, indicators, tools and equipment, AC, DG, PIU, SMPS and battery bank, Auto Man Failure (AMF) panel, alarm panel, tools like pliers, power drill, screwdrivers, spanner, measurement tools, like multi-meter and thermometer, diagnostic tools	

Module 4: Perform other operational activities at radio sites

Mapped to TEL/N6103, v2.0

Terminal Outcomes:

- Perform operational activities
- Record the status

Duration: *30:00*	**Duration**: *50:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Discuss the relevant factors to be considered while managing a site operations • Outline the different site-wise details that need to be maintained to ensure smooth operation of site • Compare and report diesel and EB bill amounts based on site usage to ratify vendor invoices • State the procedure and importance of reporting any discrepancies in invoices to appropriate personnel	• Monitor the activity of diesel filling and diesel usage to avoid any pilferage or wastage • Follow organization standards to document details of diesel filling activity, such as date and amount of diesel filled • Apply for new or renewal of required certificates from the relevant authorities within the timeline • Evaluate costs of site-wise Electricity Board (EB) connection, diesel and rent details received from the vendors (invoices/as per contract) • Calculate diesel and EB bill amounts based on site usage • Coordinate with other departments to ensure timely payment and other services discharge
Classroom Aids:	
Whiteboard and Markers Chart paper and sketch pens LCD Projector and Laptop for presentations	
Tools, Equipment and Other Requirements	
passive infrastructure equipment like DG set, PIU panel, earthing systems, transformer, SMPS, air conditioner, battery list of certifications applicable for sites	

Module 5: 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.	

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 6: Working effectively and optimizing resources for a safe workplace

Mapped to TEL/N9104 v1.0

Terminal Outcomes:

- 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 minimise 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	

Module 7: On-the-Job Training

Mapped to Telecom Infrastructure Engineer

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

Terminal Outcomes

1. Categorize and ensure electrical wires, their labels and codes are as per specifications.
2. Ensure that the site equipment such as AC, DG, PIU, /SMPS /IPMS and battery bank is properly functioning.
3. Use mechanical tools and equipment required for site maintenance.
4. Identify recurring faults and rectify these.
5. Monitor maintenance activities and replace/repair defective or faulty part/equipment.
6. Conduct testing activities including initial diagnostic tests.
7. Create a record for voltage and current readings from Power Interface Unit (PIU).
8. Troubleshoot and rectify faults pertaining to Auto Man Failure (AMF) panel, alarm panel, Miniature Circuit Breaker (MCB), battery bank, DG set etc.
9. Ensure that emergency incidents like passive equipment failures, are duly and timely reported to the management.
10. Create formats/checklists for preventive maintenance/repair of equipment.
11. Estimate the costs and results of different upgradation activities beforehand.
12. Develop a contingency plan to be implemented in case of service disruption.
13. Observe up-gradation activities.
14. Supervise administrative tasks post up-gradation activities.
15. Perform a visual inspection of the site to report the maintained effectiveness.
16. Maintain log card compliance and activity logs.
17. Monitor the activity of diesel filling and diesel usage.
18. Adhere to organization standards to document details of diesel filling activity.
19. Apply for new or renewal of certificates from the relevant authorities as per requirements.
20. Evaluate costs of site-wise Electricity Board (EB) connection, and other such details.
21. Compute diesel and EB bill amounts based on site usage.
22. Interact with other departments to ensure timely payment and other services discharge.

Module 8: DGT/VSQ/N0102 Employability Skills (60 hours)

Mapped to Telecom Infrastructure 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	• Describe the role of digital technology in today's life.	10

	Skills	• 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.	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 (Telecom Infrastructure Engineer)

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

Trainer Certification	
Domain Certification	**Platform Certification**
Job Role: "Telecom Infrastructure Engineer Level 5" "TEL/Q6100 v3.0", Minimum accepted score is 80%	Job Role: "Trainer **(VET and Skills)**", "MEP/Q2601" v2.0, Minimum accepted score is 80%

Assessor Requirements (Telecom Infrastructure Engineer)

Assessor Prerequisites						
Minimum Educational Qualification	**Specialization**	**Relevant Industry Experience**		**Training Experience**		**Remarks**
		Years	***Specialization***	***Years***	***Specialization***	
B.E./B.Tech/ BCA/B.SC	Science/Electronics/ Telecom/IT and other relevant fields	2	Tower Maintenance	0	NA	Eligible for ToA Program

Assessor Certification	
Domain Certification	**Platform Certification**
Job Role: "Telecom Infrastructure Engineer Level5" "TEL/Q6100 v3.0", Minimum accepted score is 80%	Job Role: "Assessor **(VET and Skills)**" "MEP/Q2701" v2.0,Minimum accepted score 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: • have good communication skills • be well versed in English • have digital skills • have attention to detail • be adaptable • have willingness to learn
Current ITI trainers	Employability Skills Training (3 days full-time course done between 2019-2022)					
Certified current EEE trainers (155 hours)	from Management SSC (MEPSC)					
Certified Trainer	Qualification Pack: Trainer (MEP/Q0102)					

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
AC	Air Conditioner
DG	Diesel Generator
PIU	Power Interface Unit
SMPS	Switch Mode Power Supply
BB	Battery Bank
IPMS	Integrated Power Management System
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
ES	Employability Skills