QUALIFICATION FILE

Fiber Installation, Testing and Commissioning Technician

☒ Short Term Training (STT) ☐ Long Term Training (LTT) ☒ Apprenticeship

☒ Upskilling ☐ Dual/Flexi Qualification ☒ For ToT ☒ For ToA

☒General ☐ Multi-skill (MS) ☐ Cross Sectoral (CS) ☐ Future Skills ☐ OEM

NCrF/NSQF Level: 4.0

Submitted By:

Telecom Sector Skill Council

3rd Floor, Plot No 126, Sector – 44 Gurgaon – 122003

Email: tssc@tsscindia.com

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Section 1: Basic Details

1.	**Qualification Name**	**Fiber Installation, Testing and Commissioning Technician**	
2.	**Sector/s**	**Telecom**	
3.	**Type of Qualification:** ☐ **New** ☒ **Revised** ☐ **Has Electives/Options** ☐ **OEM**	**NQR Code & version of existing/previous qualification:** *(QG-04-TL-00457-2023-V1.1-TSSC, V3.0)*	**Qualification Name of existing/previous version:** Outside Plant Fiber Installation, Testing and Commissioning Supervisor
4.	**a. OEM Name** **b. Qualification Name** (*Wherever applicable)*		
5.	**National Qualification Register (NQR) Code &Version** (*Will be issued after NSQC approval)*	QG-04-TL-04086-2025-V2-TSSC	**6. NCrF/NSQF Level:** *4.0*
7.	**Award (Certificate/Diploma/Advance Diploma/ Any Other** *(Wherever applicable specify multiple entry/exits also & provide details in annexure)*	Certificate	
8.	**Brief Description of the Qualification**	A Fiber Installation, Testing and Commissioning Technician is responsible for overseeing on-site optical fiber installation, including cable preparation, splicing, connectorization, testing, and troubleshooting while ensuring adherence to industry standards and safety protocols. The individual oversees technicians and splicers, ensuring timely project completion and maintaining high-quality service (QoS) standards.	
9.	**Eligibility Criteria for Entry for Student/Trainee/Learner/Employee**	**a. Entry Qualification & Relevant Experience:**	
10.	**Credits Assigned to this Qualification, Subject to Assessment** *(as per National Credit Framework (NCrF))*	17	**11. Common Cost Norm Category (I/II/III)** *(wherever applicable)*: *I*

S. No.	Academic/Skill Qualification (with Specialization - if applicable)	Required Experience (with Specialization - if applicable)
1.	12th grade Pass	
2.	Completed 2nd year of the 3-year diploma after 10th in Fiber Optic Technology/ Electrical Er./ Networking and Communication Technology	
3.	10th Grade Pass	3 years of relevant experience in the optical fiber domain
4.	Previous relevant Qualification of NSQF Level 3.0	3 years of relevant experience in the optical fiber domain
5.	Previous relevant Qualification of NSQF Level 3.5	1.5 years of relevant experience in the optical fiber domain

b. Age: NA

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<table>
<tr><td>12.</td><td>Any Licensing requirements for Undertaking Training on This Qualification (wherever applicable)</td><td>NA</td></tr>
<tr><td>13.</td><td>Training Duration by Modes of Training Delivery (Specify Total Duration as per selected training delivery modes and as per requirement of the qualification)</td><td>☐Offline ☐Online ☒Blended
<table>
<tr><th>Training Delivery Modes</th><th>Theory (Hours)</th><th>Practical (Hours)</th><th>OJT Mandatory (Hours)</th><th>OJT Recommended (Hours)</th><th>Total (Hours)</th></tr>
<tr><td>Classroom (offline)</td><td>150</td><td>180</td><td>180</td><td></td><td rowspan="2">510</td></tr>
<tr><td>Online</td><td>150</td><td></td><td></td><td></td></tr>
</table>
(Refer Blended Learning Annexure for details)</td></tr>
<tr><td>14.</td><td>Aligned to NCO/ISCO Code/s (if no code is available mention the same)</td><td>NCO-2015/7422.0804</td></tr>
<tr><td>15.</td><td>Progression path after attaining the qualification (Please show Professional and Academic progression)</td><td>Fiber Installation, Testing and Commissioning Technician (NSQF Level 4) → Cluster In-Charge (NSQF Level 5)</td></tr>
<tr><td>16.</td><td>Other Indian languages in which the Qualification & Model Curriculum are being submitted</td><td>Hindi</td></tr>
<tr><td>17.</td><td>Is similar Qualification(s) available on NQR-if yes, justification for this qualification</td><td>☐ Yes ☒ No URLs of similar Qualifications:</td></tr>
<tr><td>18.</td><td>Is the Job Role Amenable to Persons with Disability</td><td>☒ Yes ☐ No
If “Yes”, specify applicable type of Disability: Motor Impairment, Hearing Impairments, Speech and Language Disorders</td></tr>
<tr><td>19.</td><td>How Participation of Women will be Encouraged</td><td>Encouraging the participation of women in the role of Fiber Installation, Testing and Commissioning Technician in the telecom sector can be achieved through strategies that foster diversity, inclusivity, and gender equality. This can include offering targeted training and skill development programs for female candidates interested in these roles. Additionally, creating a workplace culture that is safe, respectful, and inclusive, and free from harassment or discrimination, is crucial for ensuring equal opportunities for women in the telecom sector.</td></tr>
<tr><td>20.</td><td>Are Greening/ Environment Sustainability Aspects Covered (Specify the NOS/Module which covers it)</td><td>☒ Yes ☐ No
NOS: TEL/N9111</td></tr>
<tr><td>21.</td><td>Is Qualification Suitable to be Offered in Schools/Colleges</td><td>Schools ☐ Yes ☐ No Colleges ☒ Yes ☐ No</td></tr>
<tr><td>22.</td><td>Name and Contact Details of Submitting / Awarding Body SPOC
(In case of CS or MS, provide details of both Lead AB & Supporting ABs)</td><td colspan="2">Name: Mr. Praveen Sirohi
Email: ceo@tsscindia.com Contact No.: 0124-4148029
Website: www.tsscindia.com</td></tr>
<tr><td>23.</td><td>Final Approval Date by NSQC: 08-05-2025</td><td>24. Validity Duration: 3 years</td><td>25. Next Review Date: 30-04-2028</td></tr>
</table>

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Section 2: Module Summary

NOS/s of Qualifications

(In exceptional cases these could be described as components)

Mandatory NOS/s:

Specify the training duration and assessment criteria at NOS/ Module level. For further details refer curriculum document.

***Th.**-Theory **Pr.**-Practical **OJT**-On the Job Training **Man.**-Mandatory **Rec.**-Recommended **Proj.**-Project*

S. No	NOS/Module Name	NOS/Module Code & Version *(if applicable)*	Core/ Non-Core	NCrF/NSQF Level	Credits as per NCrF	Training Duration (Hours)					Assessment Marks					
						Th.	Pr.	OJT-Man.	OJT-Rec.	Total	Th.	Pr.	Proj.	Viva	Total	Weightage (%) *(if applicable)*
1.	Fiber Construction, Performance and Selection Criteria	TEL/N4126, v5.0	Core	4.0	4	30	40	50	-	120	30	50	-	20	100	15
2.	Fiber connectorisation, splicing and first level checks	TEL/N4127, v5.0	Core	4.0	3	20	20	50	-	90	30	50	-	20	100	15
3.	Cable Installation Procedures and Practices	TEL/N4128, v6.0	Core	4.0	3	20	40	30	-	90	30	50	-	20	100	15
4.	Preparing Cables for Termination and Splicing	TEL/N4129, v4.0	Core	4.0	2	20	20	20	-	60	30	50	-	20	100	15
5.	Fiber Testing and Troubleshooting	TEL/N4130, v4.0	Core	4.0	2	10	20	30	-	60	30	50	-	20	100	10
6.	Work Safety Practices with Fiber Optics	TEL/N4131, v5.0	Core	3.0	1	10	20	-	-	30	30	50	-	20	100	10
7.	Follow sustainability practices in telecom cabling operations	TEL/N9111, v1.0	Core	4.0	1	10	20	-	-	30	30	50	-	20	100	10
8.	Employability Skills (30 Hours)	DGT/VSQ/N0101, v1.0	Non-Core	2.0	1	30	-	-	-	30	20	30	-	-	50	10
Duration (in Hours) / Total Marks					17	150	180	180	-	510	230	380	-	140	750	100

Assessment - Minimum Qualifying Percentage

*Please specify **any one** of the following:*

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Minimum Pass Percentage – Aggregate at qualification level: 70 % *(Every Trainee should score specified minimum aggregate passing percentage at qualification level to successfully clear the assessment.)*

Minimum Pass Percentage – NOS/Module-wise: - % *(Every Trainee should score specified minimum passing percentage in each mandatory and selected elective NOS/Module to successfully clear the assessment.)*

Section 3: Training Related

1.	**Trainer's Qualification and experience in the relevant sector (in years)** *(as per NCVET guidelines)*	**Educational Qualification:** Graduate in any discipline, preferably Electronics and Communication /Telecom/ Information Technology/ Computer Science and other relevant fields. **Industry & Training Experience:** Minimum 6 years of experience after Graduation in Optical Fiber Domain. **Certification:** "Trainer" mapped to the Qualification Pack "MEP/Q2601, v3.0". Minimum accepted score is 80% aggregate.
2.	**Master Trainer's Qualification and experience in the relevant sector (in years)** *(as per NCVET guidelines)*	**Educational Qualification:** Graduate in any discipline, preferably Electronics and Communication /Telecom/ Information Technology/ Computer Science and other relevant fields. **Industry & Training Experience:** Minimum 10 years of experience after Graduation in Optical Fiber Domain. **Certification:** "Master Trainer" mapped to the Qualification Pack "MEP/Q2602, v3.0". Minimum accepted score is 90% aggregate.
3.	**Tools and Equipment Required for Training**	☐Yes ☐No (*If "Yes", details to be provided in Annexure)*
4.	**In Case of Revised Qualification, Details of Any Upskilling Required for Trainer**	NA

Section 4: Assessment Related

1.	**Assessor's Qualification and experience in relevant sector (in years)** *(as per NCVET guidelines)*	**Educational Qualification:** Graduate in any discipline, preferably Electronics and Communication /Telecom/ Information Technology/ Computer Science and other relevant fields. **Industry & Training Experience:** Minimum 6 years of experience after Graduation in Optical Fiber Domain. **Certification:** "Assessor" mapped to the Qualification Pack "MEP/Q2701, v3.0". Minimum accepted score is 80% aggregate.
2.	**Proctor's Qualification and experience in relevant sector (in years)** *(as per NCVET guidelines)*	**Educational Qualification:** Graduate in any discipline, preferably Electronics and Communication /Telecom/ Information Technology/ Computer Science and other relevant fields. **Industry & Training Experience:** Minimum 6 years of experience after Graduation in Optical Fiber Domain.

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		Certification: "Assessor" mapped to the Qualification Pack "MEP/Q2701, v3.0". Minimum accepted score is 80% aggregate.
3.	**Lead Assessor's/Proctor's Qualification and experience in relevant sector (in years)** *(as per NCVET guidelines)*	**Educational Qualification:** Graduate in any discipline, preferably Electronics and Communication /Telecom/ Information Technology/ Computer Science and other relevant fields. **Industry & Training Experience:** Minimum 10 years of experience after Graduation in Optical Fiber Domain. **Certification:** "Lead Assessor" mapped to the Qualification Pack "MEP/Q2702, v3.0" Minimum accepted score is 90% aggregate.
4.	**Assessment Mode** *(Specify the assessment mode)*	Offline/Online
5.	**Tools and Equipment Required for Assessment**	☒ Same as for training ☐ Yes ☐ No *(details to be provided in Annexure-if it is different for Assessment)*

Section 5: Evidence of the need for the Qualification

Provide Annexure/Supporting documents name.

1.	**Latest Skill Gap Study (not older than 2 years) (Yes/No):** NA
2.	**Latest Market Research Reports or any other source (not older than 2 years) (Yes/No):** NA
3.	**Government /Industry initiatives/ requirement (Yes/No):** NA
4.	**Number of Industry validation provided:** 21
5.	**Estimated nos. of persons to be trained and employed:** 1860
6.	**Evidence of Concurrence/Consultation with Line Ministry/State Departments:** *Approved* If "No", why:

Section 6: Annexure & Supporting Documents Check List

Specify Annexure Name / Supporting document file name

1.	**Annexure:** NCrF/NSQF level justification based on NCrF level/NSQF descriptors *(Mandatory)*	*Annexure 1*
2.	**Annexure:** List of tools and equipment relevant for qualification *(Mandatory, except in case of online course)*	*Annexure 2*
3.	**Annexure:** Detailed Assessment Criteria *(Mandatory)*	*Annexure 6*
4.	**Annexure:** Assessment Strategy *(Mandatory)*	*Annexure 7*

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5.	**Annexure:** Blended Learning *(Mandatory, in case selected Mode of delivery is "Blended Learning")*	*NA*
6.	**Annexure:** Multiple Entry-Exit Details *(Mandatory, in case qualification has multiple Entry-Exit)*	*NA*
7.	**Annexure:** Acronym and Glossary *(Optional)*	*Annexure 8*
8.	**Supporting Document:** Model Curriculum *(Mandatory – Public view)*	*Attached*
9.	**Supporting Document:** Career Progression *(Mandatory - Public view)*	*Attached*
10.	**Supporting Document:** Occupational Map *(Mandatory)*	*Attached*
11.	**Supporting Document:** Assessment SOP *(Mandatory)*	*Attached*
12.	**Any other document you wish to submit:**	*N0*

Annexure 1: Evidence of Level

NCrF/NSQF Level Descriptors	Key requirements of the job role/ outcome of the qualification	How the job role/ outcomes relate to the NCrF/NSQF level descriptor	NCrF/NSQF Level
Professional Theoretical Knowledge/Process	**The Professional Theoretical/Practical knowledge required for the job role are:** **Fiber Construction, Performance and Selection Criteria** • Understand the structure and composition of various fiber types including bend-insensitive and multi-core fibers • Apply principles of optical transmission and loss mechanisms to evaluate fiber suitability • Interpret performance parameters like attenuation, dispersion, and bandwidth for deployment decisions • Select appropriate fiber types based on installation environment, application, and compatibility with passive components • Determine cable types using criteria such as pulling strength, bend radius, and environmental resistance **Fiber Connectorisation, Splicing and First-Level Checks** • Identify connector types, color codes, and polish grades, and relate them to signal performance	The role of a Fiber Installation, Testing and Commissioning Technician at NSQF Level 4.0 is justified by its balanced combination of supervisory and hands-on responsibilities. The job holder exercises autonomy in planning and overseeing field operations, provides technical guidance to field technicians, and ensures quality and compliance in fiber installation and testing. Simultaneously, they may engage in performing key tasks directly, particularly during fault resolution, splicing, or testing phases. The blend of theoretical understanding, operational leadership, and executional capabilities aligns well with the NSQF 4.0 level, reflecting both applied knowledge and supervisory depth.	4.0

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	requirements • Apply mechanical splicing methods using elastomeric or gel-based techniques • Operate fusion splicers and calibrate arc settings for minimal splice loss • Conduct ribbon splicing using specialized cleavers and alignment tools in high-density networks • Perform first-level checks using OTDR and VFL to validate connector and splice integrity • Document splice losses, connector types, and test results for compliance and quality tracking **Cable Installation Procedures and Practices** • Conduct route surveys and pre-installation inspections to assess feasibility and risks • Implement direct buried cable laying using trenching, micro-trenching, grounding, and backfilling techniques • Perform underground (duct) installations using cable blowing, pulling grips, and fill ratio calculations • Supervise aerial cable installation including messenger strand deployment, sag adjustments, and weatherproofing • Ensure compliance with bending radius, pulling tension, and cable drum handling practices **Preparing Cables for Termination and Splicing** • Use stripping tools to prepare cable jackets and access fiber bundles without damage • Follow correct drum handling, positioning, and unloading procedures to maintain cable integrity • Calculate and manage slack based on installation layout and future maintenance needs • Implement proper wrapping, securing, and labeling methods for fiber protection and traceability		

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	Fiber Testing and Troubleshooting • Measure optical parameters such as insertion loss, return loss, and reflectance using OLTS and OTDR • Use OTDR, OPM, VFL, and inspection scopes to locate fiber breaks, connector faults, or excessive attenuation • Interpret OTDR traces to differentiate between splice loss, macro bends, and connector reflections • Maintain calibrated test equipment and ensure secure documentation of test results **Work Safety Practices with Fiber Optics** • Apply laser safety protocols when working with splicing machines and FTTH optical equipment • Handle and dispose of fiber shards, scraps, and chemicals safely using PPE and MSDS guidelines • Follow ANSI, TIA, and ISO standards for fiber optic workplace safety • Identify site hazards and implement mitigation strategies, especially in confined or overhead spaces **Follow Sustainability Practices in Telecom Cabling Operations** • Identify recyclable materials like plastic ducts, fiber sheathing, and reusable enclosures • Segregate and dispose hazardous waste such as lead cables and chemical adhesives according to SOPs • Plan installations to reduce material wastage, optimize ducting, and promote reuse of components • Record sustainability practices and compliance for audits and continuous improvement **Comply with Environmental and Regulatory Standards** • Interpret and apply national and local		

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	environmental norms relevant to telecom cabling • Follow e-waste management and documentation protocols in line with regulatory frameworks • Ensure all cabling and installation activities align with telecom infrastructure codes and clearances		
Professional and Technical Skills/ Expertise/ Professional Knowledge	• Understand fiber construction, transmission characteristics, and criteria for selecting appropriate fiber and cable types • Perform and supervise fiber transmission checks to ensure signal integrity and standard compliance • Apply correct procedures for mechanical, fusion, and ribbon splicing based on network requirements • Conduct first-level testing using OTDR, VFL, and power meters, and document results for performance validation • Execute and oversee cable installation methods for buried, duct, and aerial networks in line with regulatory norms • Prepare fiber cables for termination, manage slack, and ensure mechanical protection and proper handling • Use advanced testing tools to interpret performance data and localize faults accurately • Troubleshoot network issues based on OTDR traces and loss measurements, and apply corrective actions • Follow FTTH/X-specific safety protocols, laser safety, PPE use, and environmental hazard mitigation • Implement sustainability measures such as material reuse, waste segregation, and energy-efficient practices • Maintain accurate documentation for installations, testing, faults, and maintenance activities • Supervise field teams, allocate resources effectively, and ensure timely and quality project execution	The job holder demonstrates both supervisory and technical capabilities in the fiber installation and commissioning domain. The individual is responsible for overseeing field teams, planning and supervising installations, conducting advanced testing, and ensuring quality compliance, while also executing critical technical tasks when necessary. Their ability to apply specialized knowledge, guide others, and manage real-world telecom projects with a moderate degree of autonomy and complexity reflects the competencies defined at NSQF Level 4.0.	4.0
Employment Readiness & Entrepreneurship Skills & Mind-set/Professional Skill	• Select and operate appropriate tools, materials, and test equipment to optimize installation and testing workflows • Apply analytical thinking to diagnose faults, resolve splicing issues, and improve field efficiency • Identify process gaps and implement improvements to	This job role combines practical execution with supervisory responsibilities, requiring the ability to manage resources, guide team members, and optimize operational processes. The role demands structured decision-making, coordination, and initiative in field operations, with an emphasis on quality, safety, and client satisfaction. The	4.0

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	reduce costs and enhance service quality • Follow workplace safety protocols, ESD handling procedures, and environmental best practices • Ensure adherence to quality benchmarks and regulatory compliance during installation and commissioning • Plan, schedule, and streamline field activities for fiber deployment with minimal downtime and rework • Define and apply SOPs for splicing, testing, troubleshooting, and documentation • Foster teamwork, guide technicians, and communicate effectively with stakeholders for coordinated field operations • Demonstrate entrepreneurial orientation by identifying service expansion or independent contracting opportunities in fiber installation and maintenance • Adopt customer-focused approaches and propose technical solutions to improve service reliability and user satisfaction	individual's entrepreneurial outlook and capacity to improve efficiency and solve field-level issues align well with the autonomy and responsibility defined at NSQF Level 4.0.	
Broad Learning Outcomes/Core Skill	**The Broad Learning Outcomes/Core Skill are:** • Demonstrate practical understanding of fiber construction, installation procedures, and transmission checks • Apply correct fiber selection methods based on environmental, technical, and project-specific criteria • Execute mechanical, fusion, and ribbon splicing and carry out first-level testing for performance assurance • Implement direct buried, duct, and aerial installation methods following safety and regulatory norms • Prepare cables, manage slack, and handle fiber as per installation and termination best practices • Adhere to workplace safety, FTTH/X-specific protocols, and laser handling precautions • Use OTDR, OPM, VFL, and other testing tools for fiber diagnostics and performance measurement • Apply fault localization techniques and conduct corrective action for uninterrupted network service • Maintain accurate documentation for splicing, testing, and	The job role requires applied skills and structured knowledge in fiber optic deployment, with a strong focus on supervision and execution. The individual demonstrates the ability to perform technical tasks, guide team members, and ensure quality and compliance in varied telecom environments. With responsibility for planning, coordination, and fault resolution using standard procedures, the role fits well within NSQF Level 4.0, representing a balance of operational proficiency and supervisory competence in a dynamic field setting.	4.0

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	installation activities • Follow waste segregation and recycling procedures in compliance with sustainability norms • Optimize use of materials and tools to reduce wastage and improve efficiency • Ensure compliance with environmental regulations and telecom standards during field operations		
Responsibility	**The responsibilities are:** • Supervise fiber optic construction, transmission checks, and compliance with project specifications • Evaluate fiber performance parameters and ensure correct fiber and cable type selection • Perform and oversee connectorization, mechanical/fusion/ribbon splicing, and immediate performance checks • Ensure quality execution of cable installation in direct buried, duct, and aerial environments • Conduct pre-installation site assessments and verify installation readiness • Oversee and execute fiber cable preparation, handling, and slack management for termination • Operate and interpret results from OTDR, power meters, and other test instruments for troubleshooting • Lead fault localization activities and implement corrective measures to restore network performance • Maintain accurate records of splicing, testing, and installation activities for audit and quality control • Enforce safety protocols during FTTH/X installations and ensure team compliance with standards • Promote and implement sustainable practices, including material optimization and proper waste disposal • Ensure adherence to environmental, regulatory, and	The role demands structured application of technical knowledge, independent task execution, and supervisory responsibility. The individual manages field teams, ensures adherence to fiber optic installation standards, and directly contributes to troubleshooting and testing when needed. With partial autonomy, accountability for quality, and responsibility for operational coordination, the role aligns with NSQF Level 4.0, reflecting a blend of skilled execution and oversight in a moderately complex work environment.	4.0

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	telecom industry standards • Coordinate with cross-functional teams and guide technicians to meet quality and timeline targets.		

Annexure 2: Tools and Equipment (Lab Set-Up)

List of Tools and Equipment

Batch Size: 30

S. No.	Tool / Equipment Name	Specification	Quantity for specified Batch size
1.	Connectors	Pieces	6
2.	Slack brackets	Pieces	6
3.	Safety Gear (Hand gloves, Eye protective glass)	Pieces	6
4.	Fiber Optic Stripper	Pieces	6
5.	Projection System with PC/Laptop	Piece	1
6.	Mechanical Splicer	Pieces	6
7.	Cable Splitter	Pieces	6
8.	Cable Cutter	Pieces	6
9.	Splices	Pieces	6
10.	Fiber Optic Test Source	Piece	1
11.	Black/White Board & Marker	Piece	1
12.	Fusion Splicer (Splicing machine)	Pieces	2
13.	Shaft	Pieces	6
14.	Cleaver	Pieces	6
15.	Cable Jacket Stripper	Pieces	6
16.	Tweezers	Pieces	6
17.	OTDR	Piece	1
18.	Connector Crimper	Pieces	6
19.	Fiber Optic Power Meter	Piece	1
20.	Fiber optic Cables (Multi-tube single/double jacket, dielectric amroured fiber, uni-tube/multi-tube single/double jacket, ADSS fiber cable etc.)	unit	200

Classroom Aids

The aids required to conduct sessions in the classroom are:

1. Whiteboard
2. Projector
3. Computer/Laptop
4. Chairs
5. Tables
6. Whiteboard marker
7. Duster

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Annexure 3: Industry Validations Summary

Provide the summary information of all the industry validations in table. This is not required for OEM qualifications.

S. No	Organization Name	Representative Name	Designation	Contact Address	Contact Phone No	E-mail ID	LinkedIn Profile *(if available)*
1.	Ibus Network and infrastructure Pvt.Ltd.	TK Narayanan	Deputy General Manager Commercial	7th Floor Tower B, Vatika Towers Golf Crouse Road Sector 54 Gurugram ,Haryana India 122011		tk.narayanan@ibusnetworks.com	
2.	ICAII Computer & IT Skill Enhancement Institute (ICSE)	Er. Kamaljeet Kumar Sharma	Managing Director	#2266 (Site No. 24), Phase 7/Sector 61, S.A.S Nagar (Mohali) 160062, Punjab (India)		contact@icseinstitute.com kksmhl@gmail.com	
3.	JRS Global Networks Pvt.Ltd.	Arvind Yadav	Asst. Account Manager Telecom	A 22, Sector-65 Noida, UP-201307		account3@jrsgl.com	
4.	Expert Consultant & Coach for Telecom Fibre Optics, FTTx and Broadband	Dr. Anuj Shrivastava	Ex Executive Director Indian Telecom Services	Ghaziabad, UP		srianujkumar@gmail.com	
5.	Jio Platforms Limited (Jio)	Abhijay Singh Sisodia	Senior Manager	Office-101, Saffron, Nr.Centre Point, Panchwati 5 Rasta, Ambawadi, Ahmedabad-380006 Gujarat		abhijay.sisodia@ril.com	
6.	Vodafone India Shared Service Private Limited	Manmohan Sharma	Deputy General Manager	0-4th floor, Cluster D, Wing 3, EON Free Zone, Kharadi, Pune, Maharashtra 411014		manmohan.sharma@vodafone.com	
7.	Teoco	Naman Khosla Abhijay Singh Sisodia	Technical Consultant	Infotech Center -6th floor, 14/2 Old Delhi Gurgaon Road, Dundahera, Gurgaon – 122016, India		naman.khosla@teoco.com	
8.	Global Logic	Rashid Muhammad	Associate Manager	Plot No.7, Oxygen Business Park SEZ, Tower, 3, Noida-Greater Noida Expy, Sector 144, Noida, Uttar Pradesh 201304		rashid.muhammad@globallogic.com	

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9.	Mahendra Technical Institute	Mahendra Brmukh	Chairman and Managing Director	1st Floor, 3/B M B Classic, Telco Road, Near Kailash Dairy, Chinchwad Station, Pune – 411019 Maharashtra, India		info.mtipune@gmail.com	
10.	Amazon	Anshul Gupta	Program Manager	Bangalore		anshlgu@amazon.com	
11.	Stealth Mode Startup Company	Avadh Gupta	Founder, Co-Founder & Investor	Pune		avadhmac@gmail.com	
12.	Ranitronics	Yakama Vijayasree Kumar	Founder & Technical Consultant	Villa 302, Namaha Rhythm, Road No. 1, Kavya Avenue, Bachupally, Hyderabad – 500090, Telangana		info@ranitronics.com	
13	Eco Works	Deepali Sinha Khetriwal	Founder & CEO	C-601, Kalpataru Regency Phase 1, Kalyani Nagar, Pune 411006		deepali@ecowork.international	
14	Himachal Futuristic Communications Limited (HFCL)	Amit Agarwal	VP PLM	8, Commercial Complex, Masjid Moth, Greater Kailash - 11, New Delhi -110048, India		amit.agarwal@hfcl.com	
15	Tata Communication	Alka Asthana	Head of Regulatory Affairs	Next Gen Tower Outer Ring Road, GK-1, New Delhi – 110048		alka.asthanatelecom@gmail.com	
16	Reckitt Benckiser	Sachin Sharma	Demand Manager	Udyog Vihar, Phase V, Gurgaon, Haryana		sachin.sharma@rb.com	
17	Sycamore Informatics	Rahul Kumar Kaushik	Product Manager	No. 6, 2nd Floor, 2nd Main, Arekere, Off Bannerghatta Road, Bangalore 560076		rahul.kaushik@sycamoreinformatics.com	
18	Nokia	Saurabh Singh	Software Quality Engineer	L5 and L6 Building Manyata Embassy Business Park Outer Ring Road, Nagawara 560045		saurabh.9.singh@nokia.com	
19	Edge Telecom	Arun Singh	Senior Project Engineer	9th floor, ILD Trade Centre, 904, main, Badshahpur Sohna Rd Hwy, near Subhash Chowk, Gurugram, Haryana 122018		arun.singh@edgetelecom.org	

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20	Conduent	Prince Jain	Sr. Business Analyst	Plot No. 20, Candor Tech Space, Noida 201304		prince.jain@conduent.com	
21	Artificial Intelligence Technologies	Rohit Kumar Sharma	Manager – Development	A-21, sector 4, Block A, Kailash Colony, Greater Kailash, New Delhi,		rohit.sharma@aituniversal.com	
22	Ecom Express.in	Shekhar Poswal	Senior QA L1	10th Floor, Ambience Corporate Tower II, Ambience Island, Gurugram 122001		Shekhar.p@ecomexpress.in	
23	Paarminder Electronics Process Consultancy	Paarminder Singh	Consultant	New Delhi		singhpaarminder@gmail.com	
24	Senryaku Consulting	Udit Kaushik	Co-founder	Senryaku Management Private Limited Address: UTC031, DLF The Ultima, Sector 81, Gurugram, HR 122004		udit.kau@gmail.com	
25	Sopra Steria	Rikan Singh Tomar	Team Leader	Plot No. 20 & 21, Seaview Special Economic Zone, Building 4, Sector 135, Noida, Uttar Pradesh 201304		rikan.singh@soprasteria.com	

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Annexure 4: Training & Employment Details

Training and Employment Projections:

Year	Total Candidates		Women		People with Disability	
	Estimated Training #	Estimated Employment Opportunities	Estimated Training #	Estimated Employment Opportunities	Estimated Training #	Estimated Employment Opportunities
2025	558	390	28	14	28	14
2026	558	390	28	14	28	14
2027	744	520	37	19	37	19

Data to be provided year-wise for next 3 years

Training, Assessment, Certification, and Placement Data for previous versions of qualifications:

	Year	Total Candidates	Women	People with Disability

Qualification Version		Trained	Assessed	Certified	Placed	Trained	Assessed	Certified	Placed	Trained	Assessed	Certified	Placed
3.0	April 2024 to March 2025	1490	1477	1476									

Applicable for revised qualifications only, data to be provided year-wise for past 3 years.

List Schemes in which the previous version of Qualification was implemented:

1.
2.

Content availability for previous versions of qualifications:

☐ Participant Handbook ☐ Facilitator Guide ☐ Digital Content ☐ Qualification Handbook ☐ Any Other:

Languages in which Content is available:

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Annexure 5: Blended Learning

Blended Learning Estimated Ratio & Recommended Tools:

Refer NCVET "Guidelines for Blended Learning for Vocational Education, Training & Skilling" available on:
https://ncvet.gov.in/sites/default/files/Guidelines%20for%20Blended%20Learning%20for%20Vocational%20Education,%20Training%20&%20Skilling.pdf

S. No.	Select the Components of the Qualification	List Recommended Tools – for all Selected Components	Offline : Online Ratio
1	☒Theory/ Lectures - Imparting theoretical and conceptual knowledge	LMS Portal- TSSC Telco Learning Portal will be utilized with online content/virtual lectures (Telcolearning.com)	100:100
2	☒Imparting Soft Skills, Life Skills, and Employability Skills /Mentorship to Learners	LMS Portal- TSSC Telco Learning Portal will be utilized with online content/virtual lectures (Telcolearning.com)	100:100
3	☐Showing Practical Demonstrations to the learners		
4	☐Imparting Practical Hands-on Skills/ Lab Work/ workshop/ shop floor training		
5	☐Tutorials/ Assignments/ Drill/ Practice		
6	☐Proctored Monitoring/ Assessment/ Evaluation/ Examinations		
7	☐On the Job Training (OJT)/ Project Work Internship/ Apprenticeship Training		

Annexure 6: Detailed Assessment Criteria

Detailed assessment criteria for each NOS/Module are as follows:

NOS/Module Name	Assessment Criteria for Performance Criteria/Learning Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
TEL/N4126: Fiber Construction, Performance and Selection Criteria	*Conduct optical fiber construction and transmission checks*	*10*	*15*	*-*	*6*
	PC1. review and confirm the construction specifications of fiber cables, including core, cladding, buffer coating, and bend-sensitive fibers and ribbon cables, based on project requirements	2	3	-	2
	PC2. guide team members to differentiate between cable components such as fibers, strength members, jackets, and multi-core fibers for higher data transmission.	2	3	-	1
	PC3. ensure appropriate handling practices are followed while working with strengthening members, rip cords, armored fibers, and ribbon cables	2	3	-	1

	PC4. verify transmission characteristics of different fiber types, including multimode, single-mode, and bend-sensitive fibers	2	3	-	1
	PC5. monitor and ensure compliance with installation best practices to minimize losses and maintain performance, considering ease of installation (multi-fibers, microducting, etc.)	2	3	-	1
	Evaluate fiber performance parameters	*8*	*15*	*-*	*5*
	PC6. review and guide the determination of performance indicators of an optical fiber such as attenuation, bandwidth, fiber size, and impact of multi-core fibers on data transmission	2	3	-	1
	PC7.analyze performance by interpreting characteristic charts and parameter values	2	3	-	1
	PC8.assess sources of attenuation, including scattering, absorption, bending radius, bending losses, and bend-sensitive fiber characteristics	1	3	-	1
	PC9.guide differentiation between speed and bandwidth and their impact on fiber performance for network optimization, including multi-core fiber advantages	2	3	-	1
	PC10.establish a correlation between attenuation and wavelength for effective network planning and guide team accordingly	1	3	-	1
	Identify and select suitable fiber types and identifiers	*8*	*15*	*-*	*5*
	PC11.guide classification of fiber types based on their construction like zip cord, distribution, loose tube, breakout cables, and ribbon cables	1	3	-	1
	PC12.categorize fiber types based on deployment requirements, including armored, aerial, direct burial, underwater fibers, and bend-sensitive fibers	2	3	-	1
	PC13.supervise selection and deployment of appropriate fiber types according to application and environmental factors, ensuring ease of installation	2	3	-	1
	PC14.ensure proper identification and application of standard colour codes for fiber identification by the team	2	3	-	1
	PC15.verify compatibility of selected fiber types with passive optical components for seamless integration and provide guidance where required	1	3	-	1
	Follow appropriate cable selection criteria	*4*	*5*	*-*	*4*
	PC16.guide the selection of fiber cables based on essential parameters like pulling strength, water resistance, rodent protection, and ease of installation (multi-fiber, microducting, etc.)	1	1	-	1
	PC17.ensure proper implementation of grounding and bonding techniques for armored cables by the installation team	1	2	-	1
	PC18.implement grounding and bonding techniques for armored cables to enhance safety and durability	1	1		1
	PC19.monitor and ensure compliance with environmental and industry standards while selecting cables for various deployment conditions	1	1	-	1
	Total Marks	**30**	**50**	**-**	**20**

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TEL/N4127: Fiber connectorisation, splicing and first level checks	*Connector types and their use*	*7*	*10*	-	*5*
	PC1. identify connectors based on color codes as per industry standards (TIA 568) and fiber type (single-mode, multimode)	1	2	-	1
	PC2. review and guide the selection of connector types (ST, SC, FC/PC, MT, LC, MPO/MTP) based on application requirements and site conditions	1	2	-	1
	PC3. verify and guide assessment of the effect of polish type (Flat, PC, UPC, APC) on insertion loss and return loss to ensure performance optimization	1	2	-	1
	PC4. monitor and ensure proper execution of connector termination activities in field environments by the team, ensuring inspection and cleaning for optimal performance	1	1	-	0.5
	PC5. identify and rectify common connector issues such as dirt contamination, misalignment, or end-face damage	1	1	-	0.5
	PC6. incorporate pre-terminated solutions where applicable to eliminate the need for splicing	1	1	-	0.5
	PC7. use Multi-Fiber Push-On (MPO) connectors in high-density cabling and data center environments	1	1	-	0.5
	Mechanical splicing	*5*	*8*	-	*3*
	PC8.prepare fiber for splicing, including stripping the jacket, dressing buffer tubes and fibers, and removing buffer coatings	1	2	-	1
	PC9.clean fibers using appropriate industry-standard solvents and tools	1	2	-	0.5
	PC10.perform precise fiber cleaving using calibrated cleavers	1	2	-	0.5
	PC11.execute mechanical splicing using elastomeric or other advanced splicing techniques	1	1	-	0.5
	PC12.use pre-terminated solutions to reduce splicing needs and installation time	1	1	-	0.5
	Fusion splicing	*6*	*10*	-	*4*
	PC13.prepare fiber for fusion splicing, following the applicable steps	1	2	-	1
	PC14.operate fusion splicing equipment, selecting the correct splicing program, performing arc calibration, and checking for dust contamination	1	2	-	1
	PC15.conduct fusion splicing on various fiber types, ensuring minimal splice loss	1	2	-	0.5
	PC16.review and validate splicing integrity using automated loss estimation tools and confirm compliance with performance standards.	2	3	-	1
	PC17.ensure the use of latest splicing machines and tools (e.g. heat-shrink sleeves) by the team for enhanced ease of splice and accuracy	1	1	-	0.5
	Ribbon splicing	*5*	*8*	-	*3*
	PC18.prepare fibers for ribbon splicing using appropriate ribbon jacket strippers and alignment tools	1	2	-	1

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	PC19.cleave ribbon fibers using specialized ribbon cleavers	1	2	-	0.5
	PC20.perform ribbon splicing using precision splicing equipment	1	2	-	0.5
	PC21.validate and guide the assessment of splice integrity through loss estimation and inspection in ribbon splicing	1	1	-	0.5
	PC22.apply ribbon fiber splicing in high-bandwidth networks	1	1	-	0.5
	First-level/immediate performance checks	*4*	*8*	-	*3*
	PC23.perform immediate post-splicing tests using visual fault locator (VFL) and Optical Time Domain Reflectometer (OTDR)	1	2	-	1
	PC24.monitor and guide evaluation of splices for defects such as white line, offset, diameter mismatch, bubbles, or bulging and ensure necessary corrective action is taken	1	2	-	1
	PC25.identify root causes of improper splicing and take corrective actions	1	2	-	0.5
	PC26.verify optical loss parameters measured by the team and ensure compliance with industry standards	1	2	-	0.5
	Record and report	*3*	*6*	-	*2*
	PC27.follow standard data recording and reporting formats	1	2	-	0.5
	PC28.document test results, performance parameters, cable drum markings, and splice location records	1	2	-	0.5
	PC29.review and maintain accurate logs of splicing, losses, and corrective actions	0.5	1	-	0.5
	PC30.validate and submit records and reports to appropriate authorities for validation and inspection	0.5	1	-	0.5
	Total Marks	**30**	**50**	**-**	**20**
TEL/N4128: Cable Installation Procedures and Practices	*Pre-installation checks and processes*	*8*	*15*	-	*8*
	PC1.plan and oversee pre-construction survey of the cable placing route, ensuring identification and mitigation of potential risks	2	3	-	2
	PC2. inspect and test optical fiber cables using an OTDR to assess quality and detect any faults	1	2	-	1
	PC3. perform pre-installation cable inspection to identify visible damage, compliance, and packaging integrity	1	2	-	1
	PC4.verify key parameters such as pulling tension, bending radius, cable length, and splicing length at termination points to ensure readiness for installation	1	2	-	1
	PC5. execute duct rodding, testing, and cleaning to ensure unobstructed cable installation, including the integration of micro ducting conduits for optimized capacity and scalability	2	4	-	2
	PC6.ensure compliance with regulatory and safety requirements for the installation area, ensuring proper documentation for future maintenance	1	2	-	1

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	Direct buried installation	*8*	*10*	-	*4*
	PC7. guide selection of appropriate cable type (single jacket, dual jacket, armored) suitable for site conditions	2	2		1
	PC8. perform armor bonding and grounding to enhance cable protection and longevity	1	2	-	0.5
	PC9. handle and install cables while maintaining correct bending radius and tension levels	1	1	-	0.5
	PC10. use cost-effective techniques like micro trenching to minimize excavation costs	1	1	-	0.5
	PC11. monitor execution of trenching, compacting, and back-filling activities to optimize cable protection, reduce cost and installation time, and minimize wastage and damage	1	2	-	0.5
	PC12. install underground warning tapes and markers to ensure cable identification and safety	1	1	-	0.5
	PC13. ensure site restoration activities are carried out effectively post-installation to maintain infrastructure integrity and maintain proper documentation for future reference	1	1	-	0.5
	Underground (duct) installation	*6*	*13*	-	*4*
	PC14. perform duct route verification, testing, and clearance assessment before cable installation	1	3	-	1
	PC15. use safe and efficient cable pulling techniques using appropriate tools and accessories such as pulling grips and breakaway swivels	1	2	-	1
	PC16. execute cable reel positioning and controlled pulling to avoid excessive tension and kinking	1	2	-	0.5
	PC17. implement 'figure-8' cable storing methods to prevent microbends and attenuation issues	1	2	-	0.5
	PC18. conduct cable blowing operations using compressed air to facilitate long-distance installations, incorporating micro ducting conduits to improve efficiency	1	2	-	0.5
	PC19. evaluate duct integration, fill ratio, and friction coefficients, and guide the team to optimize cable placement and lifespan	1	2	-	0.5
	Aerial Installation	*8*	*12*	-	*4*
	PC20. guide selection and confirmation of aerial cables with appropriate strength members and weather resistance for specific installations	1	1	-	0.5
	PC21. follow cable handling best practices, ensuring compliance with bending radius and tension guidelines	1	1	-	0.5
	PC22. install messenger strands and secure cables using clamps, lashing, or self-supporting methods	2	2	-	1
	PC23. deploy and install self-supporting aerial cables for stability and longevity	1	2	-	0.5

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	PC24. monitor and verify aerial cable sag and tensioning adjustments for proper alignment and load distribution	1	2	-	0.5
	PC25. apply grounding and lightning protection measures to enhance cable durability and network reliability	1	2	-	0.5
	PC26. ensure proper documentation of installation processes for future maintenance and troubleshooting	1	2	-	0.5
	Total Marks	**30**	**50**	**-**	**20**
TEL/N4129: Preparing Cables for Termination and Splicing	*Fiber optic cable preparation*	*12*	*20*	-	*9*
	PC1. remove the outer jacket using specially designed stripping tools and techniques while ensuring fiber integrity	2	3	-	2
	PC2. utilize rip-cord efficiently for accessing the cable core	2	3	-	1
	PC3. identify, dress, and secure the strength member for reliable termination	2	3	-	1
	PC4. use kellum's grip for effective cable strain relief	2	3	-	1
	PC5. cut armoured cable using industry-standard cutting tools while ensuring safety	1	2	-	1
	PC6. check and verify cable specifications before preparation activities to ensure compliance with project requirements and prevent damage	1	2	-	1
	PC7. apply right cleaving methods and quality cleaning techniques and materials for optimal performance	1	2	-	1
	PC8. ensure proper wrapping, closing, and protection of cables by the team to maintain cable integrity during and after preparation	1	2	-	1
	Fiber optic cable handling	*10*	*20*	-	*6*
	PC9. position cable drums correctly to prevent damage during installation	2	4	-	1
	PC10. lift, shift, and handle cable drums using manual and mechanical methods such as fork-lifts	2	4	-	1
	PC11. roll and unwind drums properly to prevent twisting and kinking	2	4	-	1
	PC12. ensure unloading and storage of cable drums in accordance with manufacturer guidelines to maintain cable integrity	2	4	-	1
	PC13. inspect cables before and after handling to identify potential defects or damages	1	2	-	1
	PC14. ensure the team uses high-quality splicing tools to achieve precise and durable fiber connections	1	2	-	1
	Cable slack management	*8*	*10*	-	*5*

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	PC15. review and validate slack calculations based on project needs and industry best practices	2	3	-	2
	PC16. secure slack using slack brackets, loops, or storage enclosures for long-term stability	2	3	-	1
	PC17. monitor and ensure that cable slack is managed appropriately to avoid interference with performance or future maintenance	2	2	-	1
	PC18. ensure accurate documentation of slack management procedures by the team for future reference in maintenance and troubleshooting	2	2	-	1
	Total Marks	**30**	**50**	**-**	**20**
TEL/N4130: Fiber Testing and Troubleshooting	*Fiber test parameters*	*8*	*15*	-	*5*
	PC1. measure optical parameters such as optical power, attenuation, return loss, and reflection at fiber cables and connectors using the latest methods such as LSPM, OTDR, VFL, and Optical Fiber (OF) microscope	**2**	**3**	-	1
	PC2. measure power loss for different fiber types using single-ended and double-ended loss measurement techniques, ensuring accuracy with advanced connectors	**2**	**3**	-	1
	PC3. identify fiber continuity and polarity using fiber tracers and light sources while incorporating preventive maintenance practices	**2**	**3**	-	1
	PC4. analyze optical signal loss patterns and detect potential macro/micro bends, splices, and connector faults to proactively prevent failures	**1**	**3**	-	1
	PC5. interpret test results against industry standards and project specifications, ensuring data accuracy and reliability for remote monitoring systems	**1**	**3**	-	1
	Test equipment	*10*	*20*	-	*6*
	PC6.operate OTDR to locate faults, measure fiber length, and assess splice and connector losses with a focus on preventive maintenance	**2**	**3**	-	1
	PC7.use an Optical Power Meter (OPM) and light source to measure insertion loss and power levels accurately, utilizing advanced connectors for better efficiency	**2**	**3**	-	1
	PC8.perform bidirectional OTDR testing to validate fiber loss values and reflectance characteristics while ensuring optimal network performance	**2**	**3**	-	1
	PC9.use a Visual Fault Locator (VFL) to identify macro bends and fiber breaks in short-range fiber networks, applying latest fault detection techniques	**1**	**3**	-	0.5
	PC10.inspect fiber end faces and connectors using a fiber inspection scope and clean them as per industry guidelines to prevent contamination	**1**	**3**	-	1
	PC11.perform Optical Loss Test Set (OLTS) measurements for link certification and conformance testing, integrating remote monitoring where applicable	**1**	**3**	-	1
	PC12.ensure proper calibration and maintenance of testing instruments as per manufacturer's guidelines, for long-term reliability	**1**	**2**	-	0.5

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	Fault localization and troubleshooting techniques	*6*	*8*	-	*6*
	PC13.validate analysis of OTDR traces by the team to differentiate between fiber breaks, connector reflections, and splice losses, ensuring effective fault detection	**1**	**1**	-	1
	PC14.use remote monitoring systems for quicker fault detection	**1**	**1**	-	1
	PC15.use appropriate loss measurement methods such as LSPM and VFL to isolate the source of signal degradation	**1**	**2**	-	1
	PC16.oversee the analysis of OTDR traces by the team to differentiate between fiber breaks, connector reflections, and splice losses, ensuring effective fault detection	**1**	**1**		1
	PC17.verify the impact of external factors like temperature, stress, and bending on fiber performance, implementing preventive maintenance strategies	**1**	**1**		1
	PC18.coordinate with installation teams and oversee rectification of fiber defects ensuring compliance with fiber optic standards and usage of advanced connectors	**1**	**2**	-	1
	Record and report	*6*	*7*	-	*3*
	PC19.record and maintain test parameters such as power, attenuation, link loss, and event location as per standard formats, incorporating data for remote monitoring systems	**2**	**3**	-	1
	PC20.ensure accurate documentation of fiber inspection parameters, including connector cleanliness, test results, and corrective actions taken by the team	**1**	**2**	-	1
	PC21.generate and review test reports and ensure availability of documentation for audits, compliance checks, and future reference with an emphasis on secure digital storage	**1**	**1**	-	0.5
	PC22.ensure adherence to organizational guidelines for secure storage and retrieval of test data, maintaining data integrity and availability for remote monitoring	**2**	**1**	-	0.5
	Total Marks	**30**	**50**	**-**	**20**
TEL/N4131: Work Safety Practices with Fiber Optics	*Safety practices for working with fiber optics during FTTH/X installations*	*20*	*30*	-	*15*
	PC1. follow appropriate eye-safety measures whilst working with laser-emitting devices, including Optical Network Terminals (ONTs) and splicing equipment	**2**	**3**	-	2
	PC2. safely handle bare fiber, broken ends, and scraps, ensuring proper disposal to prevent accidental injury	**2**	**3**	-	2
	PC3. follow the recommended fire safety practices, especially when using high-voltage arc fusion splicers and other heating tools	**2**	**3**	-	1
	PC4. adhere to electrical safety norms when working with fiber cables installed alongside electrical cables and active power sources	**2**	**3**	-	1
	PC5. follow laser safety rules, including proper handling of Class 1M and higher laser devices used in FTTH networks	**2**	**3**	-	2
	PC6. use and maintain appropriate safety gear, such as gloves, boots, and protective eyewear, in accordance with worksite requirements	**2**	**3**	-	2
	PC7. follow industry standards and guidelines (e.g., ANSI Z136.2 for laser safety, ISO standards for fiber optic installations)	**2**	**3**	-	1

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	PC8. maintain health and safety records accurately, including incident reports and compliance checklists	**2**	**3**	-	1
	PC9. identify and mitigate hazards associated with installation sites, such as confined spaces, sharp edges, and high temperatures	**2**	**2**	-	1
	PC10.examine and safely handle pre-terminated fiber assemblies and connectors to prevent contamination or damage	**1**	**2**	-	1
	PC11.apply safe cable routing techniques to avoid damage to existing infrastructure, such as gas pipelines, electrical cables, and water pipelines	**1**	**2**	-	1
	Industry standards and guidelines	*10*	*20*	-	*5*
	PC12. follow national and international guidelines for fiber optic installations, such as TIA/EIA-568, ITU-T standards, and BICSI guidelines	**4**	**8**	-	2
	PC13. comply with regulatory and environmental norms related to FTTH/X deployment, including e-waste management	**3**	**6**	-	2
	PC14. identify and report non-compliance issues or deviations from industry standards to the supervisor	**3**	**6**	-	1
	Total Marks	**30**	**50**	**-**	**20**
TEL/N9111: Follow sustainability practices in telecom cabling operations	*Identify recyclable, reusable, and hazardous materials*	*8*	*15*	-	*5*
	PC1. identify different types of materials used in cabling operations, such as optical fiber, connectors, protective ducts, and joint enclosures	**2**	**3**	-	1
	PC2. segregate materials into recyclable (e.g., plastic ducts, fiber offcuts, packaging), reusable (e.g., spare connectors, splitters), and hazardous (e.g., lead-based cables, old batteries, chemical adhesives) categories	**2**	**3**	-	1
	PC3. follow workplace procedures for storing recyclable materials separately from hazardous and general waste	**2**	**3**	-	1
	PC4. label and store hazardous waste safely to prevent contamination or accidents during handling and disposal	**1**	**3**	-	1
	PC5. ensure all recyclable and hazardous waste is recorded in logs for traceability and compliance	**1**	**3**	-	1
	Follow waste management, recycling, and disposal protocols	*6*	*15*	-	*5*
	PC6. adhere to applicable SOPs for safe handling and disposal of non-recyclable and hazardous materials, such as fiber shards, cable sheaths, and chemical adhesives	**2**	**3**	-	1
	PC7. coordinate safe disposal of waste materials at designated collection points or through approved vendors, as per organizational policies and environmental guidelines	**1**	**3**	-	1
	PC8. reduce waste by minimizing excess material use and reusing components wherever possible	**1**	**3**	-	1
	PC9. maintain clean and organized work sites to prevent environmental contamination and promote workplace safety	**1**	**3**	-	1

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	PC10. check for and report any issues related to improper waste disposal, unauthorized dumping, or environmental hazards to the relevant authority	**1**	**3**	-	1
	Optimize material and energy usage in cabling work	*8*	*10*	-	*5*
	PC11. plan cabling work to minimize material wastage by accurately measuring fiber optic lengths, ducts, and accessories before cutting or installing	**2**	**2**	-	1
	PC12. use energy-efficient tools and machinery where possible, ensuring minimal power consumption without compromising work efficiency	**2**	**2**	-	1
	PC13. ensure proper maintenance of cabling tools and equipment to reduce unnecessary repairs and replacements that contribute to waste	**2**	**2**	-	1
	PC14. optimize the use of trenching and ducting by following efficient layout designs to minimize excavation and reduce material consumption	**1**	**2**	-	1
	PC15. use and promote eco-friendly materials (such as low-impact protective coatings and biodegradable packaging) wherever feasible	**1**	**2**	-	1
	Comply with environmental and regulatory standards	*8*	*10*	-	*5*
	PC16. follow national and local environmental laws, regulations, and workplace policies related to telecom cabling operations	**2**	**2**	-	1
	PC17. maintain proper documentation of sustainability-related activities, including logs of disposed and recycled materials, to meet regulatory and audit requirements	**2**	**2**	-	1
	PC18. conduct periodic self-audits to verify compliance with environmental policies	**2**	**2**	-	1
	PC19. educate team members on best practices for sustainability, including waste segregation, material reuse, and responsible energy consumption	**1**	**2**	-	1
	PC20. report any violations of environmental policies, hazardous material spills, or unsafe disposal practices to the designated supervisor or regulatory body	**1**	**2**	-	1
	Total Marks	**30**	**50**	**-**	**20**
DGT/VSQ/N0101: Employability Skills (30 Hours)	*Introduction to Employability Skills*	*1*	*1*	-	-
	PC1. understand the significance of employability skills in meeting the job requirements	-	-	-	-
	Constitutional values – Citizenship	*1*	*1*	-	-
	PC2. identify constitutional values, civic rights, duties, personal values and ethics and environmentally sustainable practices	-	-	-	-
	Becoming a Professional in the 21st Century	*1*	*3*	-	-
	PC3. explain 21st Century Skills such as Self- Awareness, Behavior Skills, Positive attitude, self-motivation, problem-solving, creative thinking, time management, social and cultural awareness, emotional awareness, continuous learning mindset etc.	-	-	-	-
	Basic English Skills	*2*	*3*	-	-

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	PC4. speak with others using some basic English phrases or sentences	-	-	-	-
	Communication Skills	*1*	*1*	-	-
	PC5. follow good manners while communicating with others	-	-	-	-
	PC6. work with others in a team	-	-	-	-
	Diversity & Inclusion	*1*	*1*	-	-
	PC7. communicate and behave appropriately with all genders and PwD	-	-	-	-
	PC8. report any issues related to sexual harassment	-	-	-	-
	Financial and Legal Literacy	*3*	*4*	-	-
	PC9. use various financial products and services safely and securely	-	-	-	-
	PC10. calculate income, expenses, savings etc.	-	-	-	-
	PC11. approach the concerned authorities for any exploitation as per legal rights and laws	-	-	-	-
	Essential Digital Skills	*4*	*6*	-	-
	PC12. operate digital devices and use its features and applications securely and safely	-	-	-	-
	PC13. use internet and social media platforms securely and safely	-	-	-	-
	Entrepreneurship	*3*	*5*	-	-
	PC14. identify and assess opportunities for potential business	-	-	-	-
	PC15. identify sources for arranging money and associated financial and legal challenges	-	-	-	-
	Customer Service	*2*	*2*	-	-
	PC16. identify different types of customers	-	-	-	-
	PC17. identify customer needs and address them appropriately	-	-	-	-
	PC18. follow appropriate hygiene and grooming standards	-	-	-	-
	Getting ready for apprenticeship & Jobs	*1*	*3*	-	-
	PC19. create a basic biodata	-	-	-	-
	PC20. search for suitable jobs and apply	-	-	-	-
	PC21. identify and register apprenticeship opportunities as per requirement	-	-	-	-
	Total Marks	**20**	**30**	-	-
Grand Total		**230**	**380**	-	**140**

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Annexure 7: Assessment Strategy

This section includes the processes involved in identifying, gathering, and interpreting information to evaluate the Candidate on the required competencies of the program.

Mention the detailed assessment strategy in the provided template.

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 levels 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

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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

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.

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Annexure 8: Acronym and Glossary

Acronym

Acronym	Description
AA	Assessment Agency
AB	Awarding Body
ISCO	International Standard Classification of Occupations
NCO	National Classification of Occupations
NCrF	National Credit Framework
NOS	National Occupational Standard(s)
NQR	National Qualification Register
NSQF	National Skills Qualifications Framework
OJT	On the Job Training
TSSC	Telecom Sector Skill Council
TRAI	Telecom Regulatory Authority of India
PCB	Printed Circuit Board
RPA	Robotic Process Automation
ERP	Enterprise Resource Planning
AR	Augmented Reality
IoT	Internet of Things
SMT	Surface Mount Technology
ESD	Electrostatic Discharge
EPR	Extended Producer Responsibility

Glossary

Term	Description
National Occupational Standards (NOS)	NOS define the measurable performance outcomes required from an individual engaged in a particular task. They list down what an individual performing that task should know and also do.
Qualification	A formal outcome of an assessment and validation process which is obtained when a competent body determines that an individual has achieved learning outcomes to given standards
Qualification File	A Qualification File is a template designed to capture necessary information of a Qualification from the perspective of NSQF compliance. The Qualification File will be normally submitted by the awarding body for the qualification.
Sector	A grouping of professional activities on the basis of their main economic function, product, service or technology.
Long Term Training	Long-term skilling means any vocational training program undertaken for a year and above. https://ncvet.gov.in/sites/default/files/NCVET.pdf

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