

QUALIFICATION FILE

Solar LED 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

Submitted By:

Electronics Sector Skills Council of India (ESSCI)

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Section 1: Basic Details

1.	Qualification Name	Solar LED Technician													
2.	Sector/s	Electronics													
3.	Type of Qualification: ☐ New ☒ Revised ☐ Has Electives/Options ☐ OEM	NQR Code & version of existing/previous qualification: (change to previous, once approved)- 2022/EHW/ESSC/06655 & V3.0	Qualification Name of existing/previous version: Solar LED Technician												
4.	a. OEM Name b. Qualification Name (Wherever applicable)	NA													
5.	National Qualification Register (NQR) Code & Version (Will be issued after NSQC approval)	QG-04-EH-02821-2025-V4-ESSC	6. NCrF/NSQF Level: 4												
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	The individual is capable of installing various types of solar home-based LED lighting, outdoor and street lighting as per given instructions. The person should be able to identify faults in a solar PV system and carry out repair at a preliminary level in line with given performance parameters. The individual must adhere to all the relevant environmental, safety and regulatory requirements while carrying out his/her job duties.													
9.	Eligibility Criteria for Entry for Student/Trainee/Learner/Employee	a. Entry Qualification & Relevant Experience: <table border="1"> <thead> <tr> <th>S. No.</th> <th>Academic/Skill Qualification (with Specialization - if applicable)</th> <th>Required Experience (with Specialization - if applicable)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>12th grade or Equivalent in science</td> <td>NA</td> </tr> <tr> <td>2</td> <td>10th grade or equivalent</td> <td>3 years relevant experience</td> </tr> <tr> <td>3</td> <td>Certificate-NSQF (Level- 3.5 in relevant domain)</td> <td>1.5 years of relevant experience</td> </tr> </tbody> </table> # Relevant Experience in Solar and LED installation and repairing b. Age: NA		S. No.	Academic/Skill Qualification (with Specialization - if applicable)	Required Experience (with Specialization - if applicable)	1	12th grade or Equivalent in science	NA	2	10th grade or equivalent	3 years relevant experience	3	Certificate-NSQF (Level- 3.5 in relevant domain)	1.5 years of relevant experience
S. No.	Academic/Skill Qualification (with Specialization - if applicable)	Required Experience (with Specialization - if applicable)													
1	12th grade or Equivalent in science	NA													
2	10th grade or equivalent	3 years relevant experience													
3	Certificate-NSQF (Level- 3.5 in relevant domain)	1.5 years of relevant experience													
10.	Credits Assigned to this Qualification, Subject to Assessment (as per National Credit Framework (NCrF))	15	11. Common Cost Norm Category (I/II/III) (wherever applicable): I												

12.	Any Licensing requirements for Undertaking Training on This Qualification <i>(wherever applicable)</i>	NA																						
13.	Training Duration by Modes of Training Delivery <i>(Specify Total Duration as per selected training delivery modes and as per requirement of the qualification)</i>	☐ Offline ☐ Online ☒ Blended <table border="1"> <thead> <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> </thead> <tbody> <tr> <td>Classroom (offline)</td> <td>00:00</td> <td>180:00</td> <td>120:00</td> <td>00:00</td> <td>450:00</td> </tr> <tr> <td>Online</td> <td>150:00</td> <td>00:00</td> <td>00:00</td> <td>00:00</td> <td></td> </tr> </tbody> </table> <i>(Refer Blended Learning Annexure for details)</i>					Training Delivery Modes	Theory (Hours)	Practical (Hours)	OJT Mandatory (Hours)	OJT Recommended (Hours)	Total (Hours)	Classroom (offline)	00:00	180:00	120:00	00:00	450:00	Online	150:00	00:00	00:00	00:00	
Training Delivery Modes	Theory (Hours)	Practical (Hours)	OJT Mandatory (Hours)	OJT Recommended (Hours)	Total (Hours)																			
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Online	150:00	00:00	00:00	00:00																				
14.	Aligned to NCO/ISCO Code/s <i>(if no code is available mention the same)</i>	NCO-2015/7421.1401																						
15.	Progression path after attaining the qualification <i>(Please show Professional and Academic progression)</i>	Solar LED Project Supervisor																						
16.	Other Indian languages in which the Qualification & Model Curriculum are being submitted	Hindi																						
17.	Is similar Qualification(s) available on NQR-if yes, justification for this qualification	☐ Yes ☒ No URLs of similar Qualifications:																						
18.	Is the Job Role Amenable to Persons with Disability	☐ Yes ☒ No If "Yes", specify applicable type of Disability:																						
19.	How Participation of Women will be Encouraged	No gender sensitization																						
20.	Are Greening/ Environment Sustainability Aspects Covered <i>(Specify the NOS/Module which covers it)</i>	☒ Yes ☐ No Employability Skills (DGT/VSQ/N0101)																						
21.	Is Qualification Suitable to be Offered in Schools/Colleges	Schools ☐ Yes ☒ No Colleges ☒ Yes ☐ No																						
22.	Name and Contact Details of Submitting / Awarding Body SPOC <i>(In case of CS or MS, provide details of both Lead AB & Supporting ABs)</i>	Name: Saleem Ahmed Email: ceo@essc-india.org Contact No.: 011 – 8447738501 Website: https://www.essc-india.org/																						
23.	Final Approval Date by NSQC: 08.05.2025	24. Validity Duration: 3 Years			25. Next Review Date: 08.05.2028																			

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 to the curriculum document.

Th.-Theory **Pr.**-Practical **OJT**-On the Job **Man.**-Mandatory Training **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	Carry out the installation of the Solar PV System	ELE/N5911 & V1.0	Core	4	7	60	90	60	0	210	40	50	0	10	100	40
2	Carry out maintenance and repairs on the Solar PV System	ELE/N5912 & V1.0	Core	4	7	60	90	60	0	210	40	50	0	10	100	40
3	Employability Skills (30 hours)	DGT/VSQ/N010 1 & V1.0	Non-core	2	1	30	0	0	0	30	20	30	0	0	50	20
Duration (in Hours) / Total Marks					15	150	180	120	0	450	100	130	0	20	250	100

Elective NOS/s:

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.																
2.																
Duration (in Hours) / Total Marks																

Optional NOS/s:

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.																
2.																
Duration (in Hours) / Total Marks																

Assessment - Minimum Qualifying Percentage

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

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)	Diploma/ITI (Electrical/Mechanical/Electronics) with 2 years industrial and 1 year training experience in the field of Solar and LED installation and repairing. Or Certified in relevant CITS Trade
2.	Master Trainer's Qualification and experience in the relevant sector (in years) (as per NCVET guidelines)	Diploma/ITI/Degree (Electrical/Mechanical/Electronics) with 3 years industrial and 2 years training experience in the field of Solar and LED installation and repairing. Or Certified in relevant CITS Trade
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)	Diploma/ITI/Degree (Electrical/Mechanical/Electronics) with 3 years industrial and 2 years training experience in the field of Solar and LED installation and repairing. Or Certified in relevant CITS Trade
2.	Proctor's Qualification and experience in relevant sector (in years) (as per NCVET guidelines)	Diploma/ITI/Degree (Electrical/Mechanical/Electronics) with 4 years industrial and 2 years training experience in the field of Solar and LED installation and repairing. Or Certified in relevant CITS Trade
3.	Lead Assessor's/Proctor's Qualification and experience in relevant sector (in years) (as per NCVET guidelines)	Diploma/ITI/Degree (Electrical/Mechanical/Electronics) with 4 years industrial and 2 years training experience in the field of Solar and LED installation and repairing. Or Certified in relevant CITS Trade
4.	Assessment Mode (Specify the assessment mode)	Blended
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): Yes
2.	Latest Market Research Reports or any other source (not older than 2 years) (Yes/No): Yes
3.	Government /Industry initiatives/ requirement (Yes/No): Yes
4.	Number of Industry validation provided: 24
5.	Estimated nos. of persons to be trained and employed: 1000
6.	Evidence of Concurrence/Consultation with Line Ministry/State Departments: Yes 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 <i>(Mandatory)</i>	Attached
2.	Annexure: List of tools and equipment relevant for qualification <i>(Mandatory, except in case of online course)</i>	Attached
3.	Annexure: Detailed Assessment Criteria <i>(Mandatory)</i>	Attached
4.	Annexure: Assessment Strategy <i>(Mandatory)</i>	Attached
5.	Annexure: Blended Learning <i>(Mandatory, in case selected Mode of delivery is "Blended Learning")</i>	Filled
6.	Annexure: Multiple Entry-Exit Details <i>(Mandatory, in case qualification has multiple Entry-Exit)</i>	Filled
7.	Annexure: Acronym and Glossary <i>(Optional)</i>	Attached
8.	Supporting Document: Model Curriculum <i>(Mandatory – Public view)</i>	Attached
9.	Supporting Document: Career Progression <i>(Mandatory - Public view)</i>	Attached
10.	Supporting Document: Occupational Map <i>(Mandatory)</i>	Attached
11.	Supporting Document: Assessment SOP <i>(Mandatory)</i>	
12.	Any other document you wish to submit:	

Annexure: 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	Demands a wide range of specialised technical skill, clarity of knowledge and practice in a broad range of activity involving standard and non-standard practices. Perform installation of various types of solar	A Solar LED Technician is responsible for installing various types of solar home-based LED lighting, outdoor and street lighting as per given instructions.	4

	home based LED lighting. ● Perform maintenance of Solar PV panels after installation. ● Follow all guidelines and instructions. ● Adhere to industry work practices to achieve productivity and quality standards. ● Check the working of the solar PV panels.		
Professional and Technical Skills/ Expertise/ Professional Knowledge	Factual and theoretical knowledge in broad contexts within a field of work or study. ● Knowledge of installation requirements, installation process, working of various type components. ● Know the instructions and guidelines to achieve productivity and quality standards	A Solar LED Technician should know the installation process, their working and the guidelines to achieve productivity and quality standards. Hence Level 4	4
Employment Readiness & Entrepreneurship Skills & Mind-set/Professional Skill	A range of cognitive and practical skills required to generate solutions to specific problems in a field of work or study. ● Communicate with customer, team and concerned department to understand the customer requirement ● Identify the solutions for customer ● Maintain records and data ● Complete the documentation of sales and service records	A Solar LED Technician should be able to use basic tools in the correct way to install and test the components. He/she works after getting work requirements from supervisor or other team members. Hence Level 4	4
Broad Learning Outcomes/Core Skill	● Installation procedures ● Working and testing of various components ● Guidelines and instructions for repairing	A Solar LED Technician needs to know the installation procedures, working of various components and testing the same. The technician should keep the workplace clean and managed Hence Level 4	4

Responsibility	Responsibility of completing the work assigned and reporting the same as per standards. ● Understand the job role and follow the organisational policy ● Record and report about the work status ● Follow safety regulations at work place ● Work along with colleagues and supervisors.	A Solar LED Technician should record the issues and report about the same to the supervisor and also update the status of the work as per organisations policy. Hence Level 4	4
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Annexure: Tools and Equipment (Lab Set-Up)

List of Tools and Equipment

Batch Size: 30

S. No.	Tool / Equipment Name	Specifications	Quantity for specified Batch size
1	Safety glasses	Standard	10
2	Head protection	Standard	10
3	Rubber gloves	Standard	10
4	Safety footwear	Standard	10
5	Fire Extinguisher	Co2 type fire extinguisher	3
6	First aid kit with all contents	Standard	2
7	Drilling Machine	Power driver , hand held drilling machine	3
8	Hammer	Ball peen hammer, 0.5 kg	10
9	Chisel	55-57 HRC, 150 mm	10
10	Wire cutter	Heavy duty	10
11	Screw driver	Standard	10
12	Hand crimping tool	22-28 AWG	10
13	Megger	750 V Digital	10
14	Torque wrench	0-50, 50-100 kgf	5
15	Plier	Standard	5
16	Earth tester	0-1150 Ohm	5
17	Multimeter	DC 10 A	5
18	Hydrometer	Standard	5

19	Voltmeter	Digital voltmeter	5
20	Solar array	Total Array Wattage 500Watt	3
21	Charge controller	MPPT & PWM, 12V - 10A/20A/ 30A	3
22	Battery	100Ah	3
23	Inverter	500VA / 650VA	3
24	Generation meter	Standard	3
25	Generation display unit	Standard	3
26	LED Lightings	Various types of Bulbs/Tubelights/Street Light with atleast 3 each	10
27	Connecting Wires	Copper Wire 2MM Dia Rolls	2

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

Annexure: 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	Nagdeo Education Welfare Society	Vijay Nagdeo	General Manager	Ward No. 11 Junnardeo Dist. Chhindwara M.P. 480551	9425461093	Vijaynagdeo02@gmail.com	
2	Yuvashakti Foundation (YSF)	Motiram Pawar	Director		9922426404	yafakills@gmail.com	
3	Shiv shakti techniki evam samanaya shikshan sansthan	Jitendra Kumar Garg	President	B 32 Mahesh nagar jaipur rajasthan-302015	9782912782	jitendra.garg303@gmail.com	

4	Yaduvanshi private iti	YADVENDRA	PRINCIPAL	TC229199 - Yaduvanshi pvt iti, hasampur the- neemkathana dist-sikar RAJASTHAN PIN CODE NO -332718	8432882688	yaduvanshicollege2008@gmail.com	
5	Sri Venkateswara College of Engineering	Dr C Chandrasekhar	Head R &D & Professor in ECE	Karakmbadi Road,Tirupati 517507	9177217190	dr.chandrasekhar.c@sv colleges.edu.in	
6	Shri Prasad Sharma Shikshan Sansthan Myana	Suresh		Gautam Budha Nagar UP	8433476571		
7	Surana Solar Limited						
8	Sungrow (India) Private Limited	Shivang Gupta	Senior Executive		9999883279	Shivang.g@sungrow.com	
9	Sundak Solar Solution Pvt. Ltd.	Prince Pathak	Area Sales Manager		9911614488	Sales3@sundaksolar.com	
10	Nagravision India Pvt. Ltd	Avinash Yadav	System Administrator	RMZ Centennial, Tower C unit 301 and 302, Opp. Graphite India, Mahadevapura Post ITPL Road, 560048 Bangalore, India	9808326626	avinash.yadav@nagra.com	
11	Solar Edge Technologies Ltd.	Shivendra Singh Yadav	Manager Sales (North)		9718302626	Shivendra.s@solaredge.com	
12	Solar Promotion Society	V. Gupta	President		9717700198	solarpromotionsociety@gmail.com	
13	Ephicity Lifescience Analytics	Rahul Kumar Kaushik	Senior Software Engineer	2nd Main Rd, Sarvobhogam Nagar, Arekere, Bengaluru, Karnataka 560076	8859885973	Rahul.Kaushik@ephicity.com	
14	PC Sharda Pvt ITI	Gajraj Singh	Principal		9828626024		

15	Conduent- https://www.conduent.com	Prince Jain	Senior Business Analyst	7 to 9th Floor & 6 to 9th Floor, Building No.5 & 6, Plot No 20&21, Candor Tech Space, IT/ITES SEZ., Noida, Uttar Pradesh 201304	8439385780	prince.jain@conduent.com	
16	Artificial Intelligence Technologies	Rohit Kumar Sharma	Manager Product Development	A-21, sector 4, Block A, Kailash Colony, Greater Kailash, New Delhi	9927564461	rohit.sharma@aituniversitysal.com	
17	Siemens Limited, R&D Centre	Manoj Belgaonkar	Head Regulations, Standards and QM	Thane Belapur Road, Airoli, Navi Mumbai 400708	9841398025	manoj.belgaonkar@siemens.com	
18	Indo Green	Vineet Kumar Garg	Trainer	Indor	9977701933	Vineetgarg1973@yahoo.com	
19	IIE Educational Society	Barinder Singh	President		9829745313	ivyindiaprojects@gmail.com	
20	Bergen Associates Pvt Ltd.	Soubam Sunil	Manager	305-306, Magnum House-I, Commercial Complex, Karampura, New Delhi - 110015	9311780832	s.soubam@bergengroupindia.com	
21	Nexgen- http://www.nexgenexhibitions.com/	Saurabh Purwar	Director	1201/1206 Pragati Tower, 26 Rajendra Place, New Delhi-110008, India	9457306691	fbvidgo@gmail.com	
22	IAS Energy Solution	Atin Rathore			7011791014		
23	Sankalp Education and development society	Jafruddin Khan	SPOC		8104049522		
24	HPL Electric & Power Ltd.	S. K. Singh	National Head (Solar)		9818092882	sksingh@hplindia.com	

Annexure: Training Details

Training and Employment Projections:

Year	Total Candidates	Women	People with Disability
	Estimated Training # Total	Estimated Training # Women	Estimated Training # PwD
2025-26	250	NA	NA
2026-27	250	NA	NA
2027-28	500	NA	NA

Data to be provided year-wise for next 3 years

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

Qualification Version	Year	Total Candidates				Women				People with Disability			
		Trained	Assessed	Certified	Placed	Trained	Assessed	Certified	Placed	Trained	Assessed	Certified	Placed
3.0	2022-23	1432	1432	1432	NA	NA	NA	NA	NA	NA	NA	NA	NA
3.0	2023-24	1856	1856	1856	NA	NA	NA	NA	NA	NA	NA	NA	NA
3.0	2024-25	30744	30744	30744	NA	NA	NA	NA	NA	NA	NA	NA	NA

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. PMKVY
- 2.

Content availability for previous versions of qualifications:

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

Languages in which Content is available:

1. English

Annexure: 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	• Books/ e-books • Presentations • Reference Material • Audio / Video Modules	30:70
2	☒ Imparting Soft Skills, Life Skills, and Employability Skills /Mentorship to Learners	• Self-Learning Videos • Broadcasts • Mobile Learning • Curated Digital content	30:70
3	☒ Showing Practical Demonstrations to the learners	• Video Content • E-Resource library • AR/ VR/ XR	30:70
4	☒ Imparting Practical Hands-on Skills/ Lab Work/ workshop/ shop floor training	• Training tools (tools list attached) • Video Play • Presentations	30:70
5	☒ Tutorials/ Assignments/ Drill/ Practice	• Online Question Bank • Mobile Quick test app • MCQ based tests	30:70
6	☒ Proctored Monitoring/ Assessment/ Evaluation/ Examinations	• Assessment engine for Essays • Up-loadable file examinations • Mock test sessions	30:70
7	☒ On the Job Training (OJT)/ Project Work Internship/ Apprenticeship Training	• Online tests • Offline assessments	30:70

Annexure: 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
ELE/N5911: Carry out the installation of the Solar PV System	Identify job requirements to prepare work plan and visit customer site	11	10	-	2
	PC1. coordinate with supervisor for work order to identify job requirements	2	1		1
	PC2. interpret drawings, schematics and site layout for PV system installation	2	1		1
	PC3. prepare a plan to carry out the work as per organizational approved standards, procedures, appropriate techniques and manufacturer's instructions for PV system installation	2	2		
	PC4. analyze the different aspects of solar technologies such as solar photo voltaic and solar thermal technologies, including possible risks/hazards of PV system	2	2		
	PC5. select calibrated tools/equipment, testing devices and materials/items to conduct solar installation work	2	2		
	PC6. identify the required system components, as per job specifications, in compliance with relevant performance and safety standards defined in IEC and other international standards	1	2		
	Install PV panel structure	6	10	-	3
	PC7. Visit for customer site surveys using GPS as per work plan for Carrying out installation	1	2		1
	PC8. perform preliminary checks of the site prior to installation of PV systems using smart mounting systems.	1	2		1
	PC9. mark the work area accurately in accordance with measurements/estimations of the diagram layout	1	2		1
	PC10. prepare appropriate type of structures which are treated prior to fixing the panels as per standard requirements	1	1		
	PC11. assemble the structure safely and securely using approved methods and materials	1	2		
	PC12. inspect that buildings have been water- proofed wherever the array cables pass through the building fabric	1	1		
	Analyze specific requirements for roof structure	5	7	-	-
	PC13. fix solar PV modules on different types of roof materials using appropriate techniques	1	2		

PC14. remove the roof safely without causing any damage to the surrounding area for home based solar lighting	1	2		
PC15. store removed roof covering safely at appropriate location, protected from any possible leakage or damage	1	1		
PC16. verify that the exposed roof area is in appropriate condition to carry out the installation work	1	1		
PC17. Check that brackets do not interfere with the integrity of the roof covering	1	1		
Assemble panels	6	8	-	2
PC18. inspect that the structure/brackets are in safe condition to undergo fixing procedures	1	2		1
PC19. fix the appropriate type of mounting System on the given structure by applying suitable fixing methods	1	2		1
PC20. check that panels are in good working condition/undamaged during handling and move them to the installation area	1	1		
PC21. fix the panels to the mounting system and brackets using correct fixing accessories/cable containments	1	1		
PC22. check that the panels are securely fastened to the brackets or mounting bars using appropriate tools and method	1	1		
PC23. report problems or issues, if any, with the safety of system structures and violation of regulatory norms to the appropriate authority	1	1		
Connect panels and fix solar LED lightings	6	8	-	3
PC24. select appropriate connecting methods of the modules	1	2		1
PC25. terminate the wiring correctly in line with manufacturer's instructions, operational and regulatory requirements	1	2		1
PC26. allocate appropriate string voltages and current to inverter rating and overall system installation	1	1		1
PC27. perform approved cable routing Procedures within solar photovoltaic module arrays	1	1		
PC28. test the operation of the PV system including panel/module connections, connecting cables and complete array structure, etc. using approved procedures	1	1		
PC29. select the appropriate type of electronics luminaries such as LED lightings and their specifications that comply with performance parameters of the installed PV system	1	1		
Post installation activities	6	7	-	-

	PC30. document required information after Handover of the completed work to the customer	1	1		
	PC31. provide information to customers about manufacturer's guide on annual maintenance contract, warranty and guarantees, schedule maintenance tracker, etc.	1	2		
	PC32. return all used tools and equipment safely In their appropriate storage area	1	1		
	PC33. perform steps to dispose toxic and non- toxic waste materials as per relevant environmental safety policies	2	2		
	PC34. resolve customer queries, concerns and requests in line with relevant organization's Policies on customer service	1	2		
	NOS Total	40	50	-	10
ELE/ N5912: Carry out maintenance and repairs on the Solar PV System	Identify work requirements and prepare service kit	8	8	-	1
	PC1. coordinate with supervisor for work order to identify type of system fault from the job specifications	2	2		1
	PC2. identify required resources, materials, tools, equipment and testing devices as per given job specification	2	2		
	PC3. verify that the identified tools/equipment are in working condition and safe to handle	2	2		
	PC4. check that the required type, quality and quantity of materials are available	2	2		
	Perform routine maintenance work at site	14	18	-	4
	PC5. access the work site in accordance with organization's approved procedures and state the purpose of visit	2	2		1
	PC6. plan customer's security coverage requirements in detail as per needs communicated	2	2		1
	PC7. provide accurate information at all times in accordance with organizational quality Standards and procedures	2	3		1
	PC8. inspect that circuits or machines are safely isolated as per regulatory requirements and organizational procedures	2	3		1
	PC9. check that the identified work plan conforms to environmental, architectural, structural, site and regulatory requirements	2	3		
	PC10. perform washing away dust/dirt from the surface of the panels, using approved procedures and cleansing agents, to ensure panels/inverter are dust-free and moisture- free	2	3		
	PC11. inspect the integrated connection system for any loose wiring, connectors using approved testing procedures	2	2		

	Identify and repair faults	8	10	-	3
	PC12. detect faults using IoT-based monitoring systems and mobile diagnostic apps in the functionality of the system using photo voltaic panel fault finding methods	2	4		1
	PC13. repair, or replace, faulty components using approved methods without causing damage to any equipment, components, circuits, etc.	3	3		1
	PC14. report any unprecedented problems identified in the work to responsible authority and seek advice on how to resolve them	3	3		1
	Perform post repair and maintenance activities	10	14	-	2
	PC15. perform steps to handover the completed work to the customer and demonstrate the operation of the system as per standard quality requirements	2	2		1
	PC16. document the required information accurately after work completion as per organization's policies & procedures	2	2		1
	PC17. resolve customer queries, concerns and requests efficiently and accurately in line with relevant organizational customer service practices	2	3		
	PC18. return all used tools and equipment safely in designated storage	2	4		
	PC19. perform steps to dispose toxic and non-toxic waste materials as per relevant environmental safety policies	2	3		
	NOS Total	40	50	-	10
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	-	-
	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 & 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	-	-	-	-
NOS Total	20	30	-	-
Grand Total	100	130	-	20

Annexure: 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 SDMS/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
 - Centre 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

On the Job:

1. Each module (which covers the job profile of Solar LED Technician) will be assessed separately.
2. The candidate must score 50% in each module to successfully complete the OJT.
3. Tools of Assessment that will be used for assessing whether the candidate is having desired skills and etiquette of dealing with customers, understanding needs & requirements, assessing the customer and performing Soft Skills effectively:
 - Videos of Trainees during OJT
 - Answer Sheets of Question Banks
 - Assessing the Log Book entries of Trainees at Employer location
 - Employer Performance Feedback.
4. Assessment of each Module will ensure that the candidate is able to:
 - Understand the importance of understanding production requirements.
 - Understand the practical aspect of the process used on the Assembly line.
 - Basic health and safety practice.

Annexure: 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

Glossary

Term	Description
National Occupational Standards (NOS)	NOS defines 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