QUALIFICATION FILE

Solar Pump 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:

Agriculture Skill Council of India

Unit No. 101, First Floor, Greenwoods Plaza, Block 'B', Greenwoods City, Sector 45, Gurugram -122009, Haryana.

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Section 1: Basic Details

<table>
<tr><td>1.</td><td>Qualification Name</td><td colspan="2">Solar Pump Technician</td></tr>
<tr><td>2.</td><td>Sector/s</td><td colspan="2">Agriculture</td></tr>
<tr><td>3.</td><td>Type of Qualification: ☐ New ☒ Revised ☐ Has Electives/Options
☐OEM</td><td>NQR Code & version of existing qualification:
2022/AGR/ASCI/06539 & Version 1.0</td><td>Qualification Name of existing/previous version:
Solar Pump Technician</td></tr>
<tr><td>4.</td><td>a. OEM Name
b. Qualification Name
(Wherever applicable)</td><td colspan="2">NA</td></tr>
<tr><td>5.</td><td>National Qualification Register (NQR) Code &Version
(Will be issued after NSQC approval)</td><td>QG-04-AG-03531-2025-V2-ASCI & Version 2.0</td><td>6. NCrF/NSQF Level: 4</td></tr>
<tr><td>7.</td><td>Award (Certificate/Diploma/Advance Diploma/ Any Other
(Wherever applicable specify multiple entry/exits also & provide details in annexure)</td><td colspan="2">Certificate</td></tr>
<tr><td>8.</td><td>Brief Description of the Qualification</td><td colspan="2">A Solar Pump Technician performs various activities such as conducting site assessment and installing solar panel, battery, pump and plumbing system. The individual also monitors the solar pump and carries out its repair and maintenance.</td></tr>
<tr><td>9.</td><td>Eligibility Criteria for Entry for Student/Trainee/Learner/Employee</td><td colspan="2">a. Entry Qualification & Relevant Experience:
<table>
<tr><th>S. No.</th><th>Academic/Skill Qualification (with Specialization - if applicable)</th><th>Required Experience (with Specialization - if applicable)</th></tr>
<tr><td>1</td><td>12th or Equivalent</td><td></td></tr>
<tr><td>2</td><td>10th Class</td><td>3 years of relevant experience in Agriculture and allied sectors</td></tr>
<tr><td>3</td><td>Previous NSQF Level 3.5</td><td>1.5 Years of relevant experience in Agriculture and allied sectors</td></tr>
<tr><td>4</td><td>Previous NSQF Level 3</td><td>3 Years of relevant experience in Agriculture and allied sectors</td></tr>
</table>
b. Age: NA</td></tr>
<tr><td>10.</td><td>Credits Assigned to this Qualification, Subject to Assessment (as per National Credit Framework (NCrF))</td><td>13</td><td>11. Common Cost Norm Category (I/II/III) (wherever applicable): I</td></tr>
</table>

<table>
<tr><td>12.</td><td>Any Licensing requirements for Undertaking Training on This Qualification (wherever applicable)</td><td colspan="2">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 colspan="2">☒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>165</td><td>195</td><td>30</td><td></td><td>390</td></tr>
<tr><td>Online</td><td></td><td></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 colspan="2">NCO-2015/3142</td></tr>
<tr><td>15.</td><td>Progression path after attaining the qualification (Please show Professional and Academic progression)</td><td colspan="2">Solar Pump Technician (L4), Sales Associate (Solar Setup) (L5)</td></tr>
<tr><td>16.</td><td>Other Indian languages in which the Qualification & Model Curriculum are being submitted</td><td colspan="2">Hindi</td></tr>
<tr><td>17.</td><td>Is similar Qualification(s) available on NQR-if yes, justification for this qualification</td><td colspan="2">☐ Yes ☒ No URLs of similar Qualifications:</td></tr>
<tr><td>18.</td><td>Is the Job Role Amenable to Persons with Disability</td><td colspan="2">☒ Yes ☐ No
If “Yes”, specify applicable type of Disability: SHI</td></tr>
<tr><td>19.</td><td>How Participation of Women will be Encouraged</td><td colspan="2">Batches specific to women will be formed</td></tr>
<tr><td>20.</td><td>Are Greening/ Environment Sustainability Aspects Covered (Specify the NOS/Module which covers it)</td><td colspan="2">☒ Yes ☐ No
DGT/VSQ/N0102 (v1.0)</td></tr>
<tr><td>21.</td><td>Is Qualification Suitable to be Offered in Schools/Colleges</td><td colspan="2">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: Ms Purnambica K
Email: Standards@asci-india.com Contact No.: 0124-4670029
Website: www.asci-india.com</td></tr>
<tr><td>23.</td><td>Final Approval Date by NSQC: 18-02-2025</td><td>24. Validity Duration: 3 years post NSQC Approval</td><td>25. Next Review Date: 18-02-2028</td></tr>
</table>

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 **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	Conduct site assessment and plan the solar pump installation	AGR/N6701 (v4.0)	Core	4	1	10	20			30	30	40		30	100	25
2	Install solar panel and battery	AGR/N6702 (v3.0)	Core	4	3	25	65			90	30	40		30	100	25
3	Install plumbing system and pump	AGR/N6703 (v3.0)	Core	4	3	30	60			90	30	40		30	100	25
4	Carry out maintenance and repair of solar pump	AGR/N6705 (v4.0)	Core	4	2	20	40			60	30	40		30	100	15
5	Maintain health and safety at the workplace	AGR/N9903 (v4.0)	Non-core	4	1	20	10			30	40	25		35	100	5
6	Employability Skills (60 Hours)	DGT/VSQ/N0102 (v1.0)	Non-Core	4	2	60				60	20	30			50	5
7	OJT				1			30		30						
Duration (in Hours) / Total Marks					13	165	195	30		390	180	215		155	550	100

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 (Electrical, Electronics, Civil, Mechanical, Fitter, Instrumentation, Agriculture engineering) with 3 years of relevant industry experience as Pump Technician OR I.T.I (Electrical, Electronics, Civil, Mechanical, Fitter, Instrumentation) with 3 years of relevant industry experience as Pump Technician OR B.E./B.Tech (Civil/Mechanical/ Electrical/ Instrumentation /Electronics /Electrical and Electronics Eng./ Agriculture engineering.) with 2 years of relevant industry experience as Pump Technician* *For the school Program minimum qualification of the Trainer should be Graduate (Agriculture/ Physics). Their Teaching experience will be considered industry experience. OR Certificate (CITS Pass- Electrician & Wireman Certificate) with 1 year of relevant industry experience as Pump Technician OR M.Tech (Civil/ Mechanical/ Electrical/ Instrumentation /Electronics/ Electrical and Electronics Eng./ Agriculture engineering)
2.	**Master Trainer's Qualification and experience in the relevant sector (in years)** *(as per NCVET guidelines)*	5 years of training experience after B.E./B.Tech (Civil/Mechanical/ Electrical/ Instrumentation /Electronics /Electrical and Electronics Eng./ Agriculture engineering) with 2 years of relevant industry experience as Pump Technician OR 5 years of training experience after Certificate (CITS Pass- Electrician & Wireman Certificate) with 1 year of industry experience as Pump Technician OR 5 years of training experience after M.Tech (Civil/ Mechanical/ Electrical/ Instrumentation /Electronics/ Electrical and Electronics Eng./ Agriculture engineering) as Pump Technician
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)*	B.Tech/ B.E (Agriculture/ Agriculture Engineering/ Instrumentation/ Electrical & Electronics Engineering) with 5 years of relevant industry experience in Agriculture/ Agriculture Engineering/ Instrumentation/ Electrical & Electronics Engineering OR B.Sc. (Agriculture / Agriculture Engineering/and related streams) with 5 years of relevant industry experience in Agriculture/ Agriculture Engineering/ Instrumentation/ Electrical & Electronics Engineering OR M. Tech (Agriculture/ Agriculture Engineering/ Instrumentation/ Electrical & Electronics Engineering) with 2 years of relevant industry experience in Agriculture/ Agriculture Engineering/ Instrumentation/ Electrical & Electronics Engineering OR M.Sc. (Agriculture / Agriculture Engineering and related streams) 2 years of relevant industry experience in Agriculture/ Agriculture Engineering/ Instrumentation/ Electrical & Electronics Engineering OR PhD (Agriculture/ Agriculture Engineering/ Instrumentation/ Electrical & Electronics Engineering) with 1 year of relevant industry experience in Agriculture/ Agriculture Engineering/ Instrumentation/ Electrical & Electronics Engineering
2.	**Proctor's Qualification and experience in relevant sector (in years)** *(as per NCVET guidelines)*	Diploma/Graduate (It is mandatory for a proctor to have technical knowledge/IT knowledge Once a proctor has been on-boarded by any AA, they are oriented about skill ecosystem along with do's and don'ts .)
3.	**Lead Assessor's/Proctor's Qualification and experience in relevant sector (in years)** *(as per NCVET guidelines)*	M. Tech (Agriculture/ Agriculture Engineering/ Instrumentation/ Electrical & Electronics Engineering) with 10 years of relevant industry experience in Agriculture/ Agriculture Engineering/ Instrumentation/ Electrical & Electronics Engineering OR M.Sc. (Agriculture / Agriculture Engineering and related streams) 10 years of relevant industry experience in Agriculture/ Agriculture Engineering/ Instrumentation/ Electrical & Electronics Engineering
4.	**Assessment Mode** *(Specify the assessment mode)*	**Offline**
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):** No
3.	**Government /Industry initiatives/ requirement (Yes/No):** Government Initiative, part of PMKVY 4.0
4.	**Number of Industry validation provided:** 5
5.	**Estimated nos. of persons to be trained and employed:** 10000
6.	**Evidence of Concurrence/Consultation with Line Ministry/State Departments:** Awaited

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-5*
4.	**Annexure:** Assessment Strategy *(Mandatory)*	*Annexure-6*
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)*	
8.	**Supporting Document:** Model Curriculum *(Mandatory – Public view)*	*Annexure-7*
9.	**Supporting Document:** Career Progression *(Mandatory - Public view)*	*Sales Associate (Solar Setup) (L5)*
10.	**Supporting Document:** Occupational Map *(Mandatory)*	*Annexure-8*

11.	**Supporting Document:** Assessment SOP *(Mandatory)*	*Annexure-9*
12.	**Any other document you wish to submit:**	

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	• Plan and conduct the site-visit • Assess the site conditions and client requirements • Carry out the installation • Install the pump • Install the pipes • Monitor the solar pump remotely using the remote monitoring system • Carry out maintenance and repair	A Solar Pump Technician performs various activities such as conducting site assessment and installing solar panel, battery, pump and plumbing system. The individual also monitors the solar pump and carries out its repair and maintenance.	4
Professional and Technical Skills/ Expertise/ Professional Knowledge	• Plan the installation • Complete after-installation formalities • Guide the farmers • Follow standard safety procedures while handling an equipment	The user/individual on the job needs to know and understand the code of business conduct, job responsibilities and duties, standard training tools and procedures and organization methods for pre demonstration check-ups.	4
Employment Readiness & Entrepreneurship Skills & Mind-set/Professional Skill	• Prepare for the installation • Optimise resource utilisation • Practice inclusion at work • Participate in company's safety drills and workshops	The Job holder should have professional skills including: Decision making, Planning and Organising, Customer centricity, Problem solving, Analytical Thinking, Critical thinking.	4
Broad Learning Outcomes/Core Skill	• Arrange the resources required for the installation • Perform waste management	The job holder must have Core Skills which will include: Writing Skills, Reading Skills, Oral and	4

	• Maintain records and schedule the maintenance	Communication (Listening and Speaking).	
Responsibility	• The user/individual must know and understand how to identify and study the different parts of a tractor • identify tools and measuring instruments required • carry out routine maintenance of tractor, perform fluid and lubricant checks, check the working of all gauges • dismantle engine parts and check their working, assess the wear and tear of engine components • check the working and performance of transmission system, check the working and performance of hydraulics system • check the working and performance of auto-electrical system, clean and lubricate the parts, assemble parts • perform pre start checks, maintain a clean and efficient workplace • render appropriate emergency procedures.	A Solar Pump Technician performs various activities such as conducting site assessment and installing solar panel, battery, pump and plumbing system. The individual also carries out service and maintenance of the solar pump.	4

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	Controller	No	1
2	Face Masks	No	30
3	Tool Box	Nos	1
4	Solar Panel	Nos	1
5	Battery	Nos	1
6	Hand Gloves	No	15
7	Video Recording Equipment	Nos	1
8	Pump	Nos	1
9	Pipes/ Tubes	Nos	1
10	Fittings	Nos	1

Classroom Aids

The aids required to conduct sessions in the classroom are:

1. Whiteboard
2. Markers

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	Mahindra and Mahindra Ltd Farm division	Soumitra Choudhury	Head- Training	Nagpur	9766699020	Choudhury.soumitra@mahindra.com	
2	Farm Implements India Pvt Ltd	D S Balachandra Babu	Managing Director	Chennai	4428261676	Balachandra.babu@gmail.com	
3	Varsha Agri Business Centre for Development Ltd	Mallamma	Business Development	Chitradurga	9448396283	Info.abc4d.in	

4	K.K. Wagh College of Agricultural Engineering & Technology	Prof. Anil Nivruthi Shinde	Assistant Professor	Nashik	8975388803	anilg.shinde5@gmail.com	
5	Directorate of Agriculture Engineering, Bhopal	Dr Rajeev Chaudhary	Director Agricultural Engineering	Bhopal	7552583313	dagebho@mp.gov.in	

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
2022-23	3300		60	20		
2023-24	3300		60	20		
2024-25	3400		60	20		

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	554	494	493	0	309	299	298	0	0	0	0	0
3.0	2023-24	30758	22971	21858	484	16241	12434	11813	252	30	22	20	0
3.0	2024-25	31470	22681	21275	473	14222	12456	11617	168	0	0	0	0

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. Employment Linked Skill Training Program- Rajasthan
3. WSC RPL

Content availability for previous versions of qualifications:

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

Languages in which Content is available: Hindi and English

Annexure 5: 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
AGR/N6701: Conduct site assessment and plan the solar pump installation	*Plan and conduct the site-visit*	*7*	*10*		*10*
	PC1. co-ordinate with the relevant personnel to get the client's address, contact details and any other relevant information prior to the site-visit	-	-	-	-
	PC2. plan the site visit in a way to accommodate other daily assignments	-	-	-	-
	PC3. follow the business code of conduct during the site visit and in dealing with the customer	-	-	-	-
	Assess the site conditions and client requirements	*8*	*10*		*10*
	PC4. conduct a site survey to check soil type, land surface and exposure to sunlight	-	-	-	-
	PC5. select a spot near the water source, with good sunlight exposure and suitable for the underground battery compartment	-	-	-	-
	PC6. evaluate the client's requirements and preferences	-	-	-	-
	Plan the installation	*5*	*5*		*5*
	PC7. select the appropriate mounting structure, foundation design and mounting accessories	-	-	-	-
	PC8. explain any construction requirements to the client before solar pump installation	-	-	-	-
	PC9. prepare a plan for the installation and share the cost estimates with the client	-	-	-	-
	Arrange the resources required for the installation	*10*	*15*		*5*
	PC10. arrange the necessary funds for procuring material for installation	-	-	-	-
	PC11. identify vendors who sell the required material	-	-	-	-
	PC12. procure material for the installation of solar pump	-	-	-	-
	PC13. arrange for safe handling and storage of the procured material	-	-	-	-
	Total Marks	**30**	**40**	**-**	**30**
AGR/N6702: Install solar panel and battery	*Prepare for the installation*	*8*	*10*		*10*
	PC1. prepare the required installation material, accessories, tools, equipment and Personal Protective Equipment (PPE) for the installation	-	-	-	-
	PC2. test the Photo-Voltaic (PV) module for any defects and live current before installation	-	-	-	-
	Carry out the installation	*15*	*20*		*10*

	PC3. assess the degree of inclination and angle of tilt of PV module	-	-	-	-
	PC4. select a mounting place/pole that is strong enough to withstand different weather conditions	-	-	-	-
	PC5. carry out mounting of PV in a manner that it is able to absorb maximum solar power	-	-	-	-
	PC6. apply cover on the module and junction box during installation	-	-	-	-
	PC7. install solar cable, plugs and spare fuse and the solar panels firmly	-	-	-	-
	PC8. place battery inside the battery compartment safely	-	-	-	-
	PC9. connect the system to battery using the recommended grade of cables	-	-	-	-
	PC10. check the battery for charging	-	-	-	-
	PC11. test the system voltage	-	-	-	-
	PC12. apply the necessary adjustments to match output requirement	-	-	-	-
	PC13. conduct a test to ensure the solar pump is functioning as expected	-	-	-	-
	Complete after-installation formalities	*7*	*10*		*10*
	PC14. remove any waste material from the installation site after completing installation	-	-	-	-
	PC15. brief the client on the basic cleaning and maintenance of solar panels	-	-	-	-
	PC16. complete the necessary documentation as per the (SOP)	-	-	-	-
	Total Marks	**30**	**40**		**30**
AGR/N6703: Install plumbing system and pump	*Install the pipes*	*8*	*10*		*8*
	PC1. assemble pipe sections, fittings and tubing	-	-	-	-
	PC2. cut, thread and join pipes as per SOP	-	-	-	-
	PC3. create openings in the pipes as per the requirement	-	-	-	-
	PC4. install plumbing fittings and fixtures such as valves, clamps, elbows, sprinklers, taps, etc.	-	-	-	-
	PC5. use the relevant power and hand tools during the installation	-	-	-	-
	Install the pump	*10*	*10*		*10*
	PC6. connect the pump to the battery or inverter according to the type of pump	-	-	-	-
	PC7. connect pipes to the pump from the source to the destination of supply	-	-	-	-
	PC8. adjust the discharge of water as per the requirement	-	-	-	-
	Guide the farmers	*2*	*5*		*2*

	PC9. guide the farmers on ways to deal with common hazards associated with the use of solar pump and panels	-	-	-	-
	PC10. conduct session with the farmers to guide them on minor repair and maintenance of the solar pump and panels	-	-	-	-
	Optimise resource utilisation	*5*	*10*		*5*
	PC11. plug water leakages to prevent its wastage	-	-	-	-
	PC12. optimise the usage of water, electricity and relevant materials in various tasks and processes	-	-	-	-
	PC13. connect the electrical equipment safely and turn them off when not in use	-	-	-	-
	Perform waste management	*5*	*5*		*5*
	PC14. segregate waste into different categories	-	-	-	-
	PC15. dispose the non-recyclable waste appropriately	-	-	-	-
	PC16. deposit the recyclable and reusable materials at the identified location	-	-	-	-
	Total Marks	**30**	**40**	**-**	**30**
AGR/N6705: Carry out maintenance and repair of solar pump	*Carry out maintenance and repair*	*20*	*25*		*20*
	PC1. inspect the installation visually and using diagnostic tools	-	-	-	-
	PC2. identify any malfunctions and repair requirements basis the diagnosis	-	-	-	-
	PC3. clean the relevant components of the solar pump	-	-	-	-
	PC4. check the electrical joints and pipes for any loose connections	-	-	-	-
	PC5. examine the insulations of wires for any short circuits	-	-	-	-
	PC6. check the plumbing system for any blockages, water level and pump issues	-	-	-	-
	PC7. ensure the voltage being generated is correct as per the installation requirements	-	-	-	-
	PC8. replace any faulty components as per the Standard Operating Procedure (SOP)	-	-	-	-
	PC9. integrate all the components as per the original design after maintenance	-	-	-	-
	PC10. avoid damage of components due to negligence in ESD procedures				
	Maintain records and schedule the maintenance	*10*	*15*		*10*
	PC11. maintain the record of maintenance and repair services carried out.	-	-	-	-
	PC12. schedule the next maintenance as per the maintenance schedule	-	-	-	-

	Total Marks	30	40	-	30
AGR/N9903: Maintain health and safety at the workplace	*Maintain personal hygiene*	*10*	*5*		*10*
	PC1. wash hands, legs and face with soap/alcohol- based sanitizer at reasonable intervals				
	PC2. wash the worn clothes with soap and sun-dry before use next time				
	PC3. ensure the face is covered with mask or three layers of cloth-piece				
	PC4. follow the workplace sanitisation norms including distancing from sick people				
	Maintain clean and safe workplace	*15*	*15*		*15*
	PC5. carry out basic safety checks before operation of all tools, implements, and machinery and report identified hazards to the supervisor				
	PC6. wear appropriate Personal Protective Equipment (PPE) while performing work in accordance with the workplace policy				
	PC7. follow the instructions mentioned on the labels of chemicals/pesticides/fumigants etc. to avoid hazards				
	PC8. assess risks prior to performing manual handling jobs, and work according to currently recommended safe practices				
	PC9. sanitize equipment, tools and machinery before and after use				
	PC10. use equipment and materials safely and correctly and return the same to designated storage after use				
	PC11. dispose waste safely and correctly in the designated area				
	PC12. recognize risks to bystanders and take required action to reduce the risks				
	PC13. work in a manner which minimizes environmental damage, ensuring all procedures and instructions for controlling risks are followed				
	PC14. report any accidents, incidents or problems without delay to an appropriate person and take necessary immediate action to reduce further danger				
	PC15. follow government / workplace advisories in case of outbreak of any disease/disaster				
	Administer appropriate emergency procedures	*15*	*5*		*10*
	PC16. follow procedures for dealing with accidents, fires and emergencies, including communicating location and directions to the location of emergency, as per the workplace requirements				

	PC17. use emergency equipment in accordance with manufacturer's specifications and workplace requirements				
	PC18. report provide treatment appropriate to the patient's injuries in accordance with recognized first aid techniques				
	PC19. recover (if practical), clean, inspect/test, refurbish, replace and store the first aid equipment as appropriate				
	PC20. report details of first aid administered in accordance with workplace procedures				
	Total Marks	40	25	-	35
DGT/VSQ/N0102: Employability Skills (60 Hours)	*Introduction to Employability Skills*	*1*	*1*	-	-
	PC1. identify employability skills required for jobs in various industries	-	-	-	-
	PC2. identify and explore learning and employability portals	-	-	-	-
	Constitutional values – Citizenship	*1*	*1*	-	-
	PC3. recognize the significance of constitutional values, including civic rights and duties, citizenship, responsibility towards society etc. and personal values and ethics such as honesty, integrity, caring and respecting others, etc.	-	-	-	-
	PC4. follow environmentally sustainable practices	-	-	-	-
	Becoming a Professional in the 21st Century	*2*	*4*	-	-
	PC5. recognize the significance of 21st Century Skills for employment	-	-	-	-
	PC6. practice the 21st Century Skills such as Self- Awareness, Behaviour Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn for continuous learning etc. in personal and professional life	-	-	-	-
	Basic English Skills	*2*	*3*	-	-
	PC7. use basic English for everyday conversation in different contexts, in person and over the telephone	-	-	-	-
	PC8. read and understand routine information, notes, instructions, mails, letters etc. written in English	-	-	-	-
	PC9. write short messages, notes, letters, e-mails etc. in English	-	-	-	-
	Career Development & Goal Setting	*1*	*2*	-	-
	PC10. understand the difference between job and career	-	-	-	-
	PC11. prepare a career development plan with short- and long-term goals, based on aptitude	-	-	-	-
	Communication Skills	*2*	*2*	-	-

	PC12. follow verbal and non-verbal communication etiquette and active listening techniques in various settings	-	-	-	-
	PC13. work collaboratively with others in a team	-	-	-	-
	Diversity & Inclusion	*1*	*2*	*-*	*-*
	PC14. communicate and behave appropriately with all genders and PwD	-	-	-	-
	PC15. escalate any issues related to sexual harassment at workplace according to POSH Act	-	-	-	-
	Financial and Legal Literacy	*2*	*3*	*-*	*-*
	PC16. select financial institutions, products and services as per requirement	-	-	-	-
	PC17. carry out offline and online financial transactions, safely and securely	-	-	-	-
	PC18. identify common components of salary and compute income, expenses, taxes, investments etc	-	-	-	-
	PC19. identify relevant rights and laws and use legal aids to fight against legal exploitation	-	-	-	-
	Essential Digital Skills	*3*	*4*	*-*	*-*
	PC20. operate digital devices and carry out basic internet operations securely and safely	-	-	-	-
	PC21. use e- mail and social media platforms and virtual collaboration tools to work effectively	-	-	-	-
	PC22. use basic features of word processor, spreadsheets, and presentations	-	-	-	-
	Entrepreneurship	*2*	*3*	*-*	*-*
	PC23. identify different types of Entrepreneurship and Enterprises and assess opportunities for potential business through research	-	-	-	-
	PC24. develop a business plan and a work model, considering the 4Ps of Marketing Product, Price, Place and Promotion	-	-	-	-
	PC25. identify sources of funding, anticipate, and mitigate any financial/ legal hurdles for the potential business opportunity	-	-	-	-
	Customer Service	*1*	*2*	*-*	*-*
	PC26. identify different types of customers	-	-	-	-
	PC27. identify and respond to customer requests and needs in a professional manner.	-	-	-	-
	PC28. follow appropriate hygiene and grooming standards	-	-	-	-
	Getting ready for apprenticeship & Jobs	*2*	*3*	*-*	*-*

	PC29. create a professional Curriculum vitae (Résumé)	s	-	-	-
	PC30. search for suitable jobs using reliable offline and online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals, respectively	-	-	-	-
	PC31. apply to identified job openings using offline/online methods as per requirement	-	-	-	-
	PC32. answer questions politely, with clarity and confidence, during recruitment and selection	-	-	-	-
	PC33. identify apprenticeship opportunities and register for it as per guidelines and requirements	-	-	-	-
	Total Marks	20	30	-	
Grand Total		**180**	**215**		**155**

Annexure 6: Assessment Strategy

es involved in identifying, gathering, and interpreting information to evaluate the Candidate on the required competencies of the program.

em Overview

ultimate importance that individuals dealing with crop production or livestock have the requisite knowledge and competencies to undertake essment Criteria, SSC in association with empanelled AAs, define the test structure for the given job roles to cover the required skills and competencies. Assessment strategy consists of the following:

1. Multiple Choice Questions : To assess basic knowledge (Objective/Subjective)
2. Viva : To assess awareness on processes (Oral and/or written questioning)
3. Practical : To evaluate skills and identify competencies.(Observation)

Assessments for knowledge and awareness on processes may be conducted through 'real time' internet based evaluation or by conducting the same 'offline' through TABs. Skills and competencies are to be assessed by conducting 'practical' on ground through qualified and ToA certified assessors.

While it is important that an individual has adequate knowledge and skills to perform a specific task, weight age for different aspects for assessment are given as follows:

Multiple Choice Questions: 20%-30%, depending on the specific QP

Viva: 20%

Practical: 50% - 60% (Involves demonstrations of applications and presentations of procedures/tasks and other components)

Assessment will be carried out by certified assessors through empanelled assessment partners. Based on the results of assessment; ASCI will certify the learners/candidates

2. Testing Environment

Assessments are conducted on laptops, Mobiles and android tablets via both offline and online mode depending on the internet connectivity at assessment location.

In remote locations/villages, assessments get delivered through tablets without the requirement of Internet.

- Multilingual assessments (ASCI is conducting assessments in 13 + languages pan India)
- Rubric driven assessments in Practical/Viva sections and responses recorded accordingly
- All responses, data, records and feedback stored digitally on cloud
- Advanced auto-proctoring features – photographs, time-stamp, geographic-tagging, toggle-screen/copy-paste disabled, etc.
- Android based monitoring system
- End to end process from allocation of a batch to final result upload, there is no manual intervention
- Assessment will normally be fixed for a day after the end date of training / within 7 days of completion of training.
- Assessment will be conducted at the training venue
- Room where assessment is conducted will be set with proper seating arrangements with enough space to curb copying or other unethical activities
- Question bank of theory and practical will be prepared by ASCI /assessment agency and approved ASCI. Only from approved Question Bank assessment agency will prepare the question paper. Theory testing will include multiple choice questions, pictorial question, etc. which will test the trainee on his theoretical knowledge of the subject.
- The theory, practical and viva assessments will be carried out on same day. In case of more number of candidates, number of assessors and venue facilitation be increased and facilitated

Assessment			
Assessment Type	**Formative or Summative**	**Strategies**	**Examples**

Theory	Summative	MCQ/Written exam	Knowledge of facts related to the job role and functions. Understanding of principles and concepts related to the job role and functions
Practical	Summative	Structured tasks/Demonstration	Practical application /Demonstration /Application tasks
Viva	Summative	Questioning and Probing	Mock interviews on usability of job roles/advantages /importance of adherence to procedures. Viva will be used to gauge trainee's confidence and correct knowledge in handling job situation

The question paper pre-loaded in the computer /Tablet and it will be in the language as requested by the training partner.

3. Assessment Quality Assurance framework

Assessment Framework and Design:

Based on the Assessment Criteria, SSC in association with AAs will define the test structure for the given roles to cover the required skills and competencies. ASCI offer a bouquet of tools for multi- dimensional evaluation of candidates covering language, cognitive skills, behavioral traits and domain knowledge.

Theoretical Knowledge - Item constructs and types are determined by theoretical understanding of the testing objectives and published research about the item-types and constructs that have shown statistical validity towards measuring the construct. Test item types which have been reported to be coachable are not included. Based on these, items are developed by domain experts. They are provided with comprehensive guidelines of testing objectives of each question and other quality measures.

Type – Questions based on Knowledge Required, Case-based practical scenario questions and automated simulation based questions.

Practical Skills - The practical assessments are developed taking into consideration two aspects: what practical tasks is the candidate expected to perform on the job and what aspects of the job cannot be judged through theoretical assessments. The candidates shall be asked to perform either an entire task or a set of subtasks depending on the nature of the job role

Type – Standardized rubrics for evaluation against set of tasks in a demo/practical task

Viva Voce - Those practical tasks which cannot be performed due to time or resource constraints are evaluated through the viva mode. Practical tasks are backed up with Viva for thorough assessment and complete evaluation

Type – Procedural questions, do's and don'ts, subjective questions to check understanding of practical tasks.

Assessor has to go through orientation program organized by Assessment Agency. The training would give an overview to the assessors on the overall framework of QP evaluation. Assessor shall be given a NOS and PC level overview of each QP as applicable. Overall structure of assessment and objectivity of the marking scheme will be explained to them. The giving of marks will be driven by an objective framework which will maintain standardization of marking scheme.

4. Type of Evidence and Evidence Gathering Protocol:

During the assessment the evidences collected by AAs and ASCI are:

- Geo Tagging to track ongoing assessment
- AA's coordinator emails the list of documents and evidences (photos and videos) to the assessor one day prior to the assessment. List is mentioned below:
    - Signed Attendance sheet
    - Assessor feedback sheet
    - Candidate feedback sheet
    - Assessment checklist for assessor
    - Candidate Aadhar/ID card verification
    - Pictures of classroom, labs to check the availability of adequate equipment's and tool to conduct the training and assessment
    - Pictures and videos of Assessment, training feedback and infrastructure.
- Apart from the Assessor, Technical assistant popularly known as Proctor also ensures the proper documentation and they verify each other's tasks.
- To validate their work on the day of assessment, regular calls and video calls are done.
- On-boarding and training of assessor and proctor is done on timely basis to ensure that quality of the assessment should be maintained.
- Training covers the understanding of QP, NSQF level, NOS and assessment structure

5. Methods of Validation

- Morning Check (Pre-Assessment): Backend team of AA calls and confirms assessor/technical spoc event status. Assessor/Technical spoc are instructed to reach the centre on time by 9:30 AM / as decided with TC and delay should be highlighted to the Training Partner in advance.
- Video Calls: Random video calls are made to the technical spoc/assessor so as to keep check on assessment quality and ensure assessment is carried out in fair and transparent manner
- Aadhar verification of candidates
- Evening Check (Post Assessment): Calls are made to the ground team to ensure event is over by what time and the documentation is done in proper manner or not.
- TP Calling: To keep check on malpractice activity, independent audit team calls to TP on recorded line to take confirmation if there was any malpractice activity observed in assessment on part of AA/SSC team. If calls are not connected, email is send to TP Spoc for taking their confirmation
- Video and Picture Evidence: Backend team collects video and pictures for assessment on real time basis and highlights any issue like, Students sitting idle/trainer allowed for helping out candidates during assessment.
- Surprise Visit: Time to time SSC/AA Audit team can visit the assessment location and do surprise audit for assessment process carried out by ground team.
- Geo Tagging: On day of assessment, each technical spoc is required to login in our internal app which is Geo tagged. Any deviation with centre address needs to be highlighted to assessment team on real-time basis.

Method for assessment documentation, archiving, and Access:

- ASCI has fully automated result generation process in association with multiple AAs
- Theory, Practical and Viva marks forms the basis of the results and encrypted files generated to avoid data manipulation. All responses captured and stored in System with Time-Stamps at the end of AAs and SSC. NOS-wise and PC-wise scores can be generated.
- Maker Checker concept: 1 person prepares results and other audit result which is internally approved by AA at first and then gets vetted at the end of SSC
- All soft copy of documents is received from the on-ground tech team over mail. The same are downloaded by our internal backend team and saved in Repository. The repository consists of scheme wise folders. These scheme wise folders have job role specific folders. These specific folders have Year wise and Month wise folders where all documents are saved in Batch specific folders. All Hard copies are filed and stored in storeroom.
- **Result Review & Recheck Mechanism –**
- Time stamped assessment logs
- Answer/Endorsement sheets for each candidate
- Attendance Sheet
- Feedback Forms: Assessor feedback form, Candidate feedback form, TP feedback form
- The results for each of the candidate shall be stored and available for review (retained for 5 years/ till conclusion of project or scheme)

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 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