



QUALIFICATION FILE

BIO GAS PLANT & BIO SLURRY 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: 3

Submitted By: West Bengal State Council of Technical & Vocational Education and Skill Development

Submitting Body Name> West Bengal State Council of Technical & Vocational Education and Skill Development, Karigari Bhavan (5th Floor), Plot-B/7,
Action Area-III
New Town, Kolkata-700160

Submitting Body Contact Details:

Position in the organization: Chief Administrative Officer

Address if different from above: Same as above

Tel number(s): 033-2340-3717

E-mail address: caowbsctvesd@gmail.com

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Section 1: Basic Details

1.	Qualification Name	Bio Gas Plant & Bio Slurry Technician STC - SGJ/NSQF-2022/1402										
2.	Sector/s	Agriculture										
3.	Type of Qualification: ☐ New ☒ Revised ☐ Has Electives/Options ☐ OEM	NQR Code & version of existing/previous qualification: <i>(change to previous, once approved)</i> STC - EVN/NSQF-2018/801	Qualification Name of existing/previous version: Bio Gas & Bio Slurry Technician									
4.	a. OEM Name b. Qualification Name <i>(Wherever applicable)</i>	NA										
5.	National Qualification Register (NQR) Code & Version <i>(Will be issued after NSQC approval)</i>	QG-03-ES-00362-2023-V2-WBSC Version 2.0	6. NCrf/NSQF Level: 3									
7.	Award (Certificate/Diploma/Advance Diploma/ Any Other) <i>(Wherever applicable specify multiple entry/exits also & provide details in annexure)</i>	Certificate										
8.	Brief Description of the Qualification	Under “Bio Gas Plant & Bio slurry Technician “, trade a candidate is trained on Professional Skill, Professional Knowledge, Entrepreneurship skill and Employability Skill. In these days of Global Warming from industrial agriculture coupled with ever increasing cost of cultivation with dwindling farmer profit and Self-Declared Goal (SDG) of the country to work for clean technologies, Biogas Plant & Bio slurry management in Agriculture & fishery can work as a potential sustainable tool and create sustainable job opportunities at village level for the rural youth in Biogas Plant construction, maintenance as well as sustainable agriculture. Youth can become wage employed/ self-employed with the skill set of Bio Gas Plant construction, maintenance and bio slurry production.										
9.	Eligibility Criteria for Entry for Student/Trainee/Learner/Employee	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>Grade 10</td> <td>Nil</td> </tr> <tr> <td>2</td> <td>Grade 8 pass and pursuing continuous schooling in regular</td> <td>Nil</td> </tr> </tbody> </table>		S. No.	Academic/Skill Qualification (with Specialization - if applicable)	Required Experience (with Specialization - if applicable)	1	Grade 10	Nil	2	Grade 8 pass and pursuing continuous schooling in regular	Nil
S. No.	Academic/Skill Qualification (with Specialization - if applicable)	Required Experience (with Specialization - if applicable)										
1	Grade 10	Nil										
2	Grade 8 pass and pursuing continuous schooling in regular	Nil										

		school with vocational subject																				
	3	Grade 8 Pass with 2 year experience	2 yrs																			
	4	5th Grade Pass with 5 yrs experience	5 yrs																			
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): NA																		
12	Any Licensing requirements for Undertaking Training on This Qualification (wherever applicable)		NA																			
13	Training Duration by Modes of Training Delivery (Specify Total Duration as per selected training delivery modes and as per requirement of the qualification)		☒ 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>150</td><td>240</td><td>60</td><td></td><td>450</td></tr> <tr> <td>Online</td><td></td><td></td><td></td><td></td><td></td></tr> </tbody> </table> (Refer Blended Learning Annexure for details)		Training Delivery Modes	Theory (Hours)	Practical (Hours)	OJT Mandatory (Hours)	OJT Recommended (Hours)	Total (Hours)	Classroom (offline)	150	240	60		450	Online					
Training Delivery Modes	Theory (Hours)	Practical (Hours)	OJT Mandatory (Hours)	OJT Recommended (Hours)	Total (Hours)																	
Classroom (offline)	150	240	60		450																	
Online																						
14	Aligned to NCO/ISCO Code/s (if no code is available mention the same)		3142.9900																			
15	Progression path after attaining the qualification (Please show Professional and Academic progression)		Horizontal Progression: 1.Vermi-Composter (L-3) 2.Mushroom Cultivator (L-3) Vertical Progression: 1. Sr. Bio Gas Plant Technician (L-4) to be developed 2. Bio Gas Plant Manager (L-5)																			
16	Other Indian languages in which the Qualification & Model Curriculum are being submitted		NA																			
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	Women as part of self-help groups take part in this training and then go for self-employment as well as wage employment	
20	Are Greening/ Environment Sustainability Aspects Covered (Specify the NOS/Module which covers it)	☐ ☒ Yes ☐ No Construct a Bio Gas Plant with proper care and safety (SGJ/ 1402/OC5)	
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 (In case of CS or MS, provide details of both Lead AB & Supporting ABs)	Name: Saequa Monazza, Chief Administrative Officer Email: caowbsctvesd@gmail.com Contact No.: 033-2340-3717 Website: sctvesd.wb.gov.in	
23	Final Approval Date by NSQC: 3.5.2023	24. Validity Duration: 3 years	25. Next Review Date 3.5.2026

Section 2: Module Summary

NOS/s of Qualifications

Mandatory NOS/s:

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.	Identify Biomass resource and Bio-energy potential	SGJ/ 1402/OC1,V2.0	Core	3	1	06	24			30	10	80			90	9%
2.	Illustrate mechanism of Biogas Systems	SGJ/ 1402/OC2,V2.0	Core	3	1	10	20			30	16	60			76	7.6%
3.	Explain the process of Biomass Gasifiers	SGJ/ 1402/OC3,V2.0	Core	3	1	12	18			30	20	60			80	8%
4.	Identify appropriate site for installing the BGP	SGJ/ 1402/OC4,V2.0	Core	3	1	12	18			30	20	60			80	8%
5.	Construct a Bio Gas Plant with proper care and safety	SGJ/ 1402/OC5,V2.0	Core	3	3	15	75			90	28	210			238	23.8%
6.	Install Cooking Apparatus	SGJ/ 1402/OC6,V2.0	Core	3	1	10	20			30	16	40			56	5.6%
7.	Carry out post BGP construction activities	SGJ/ 1402/OC7,V2.0	Core	3	2	15	45			60	24	120			144	14.4%
8.	Demonstrate the procedure of Bio slurry manure making and Marketing of Organically grown crops	SGJ/ 1402/OC8,V2.0	Core	3	1	10	20			30	16	50			66	6.6%
9.	Work in real job situation with special emphasis on basic	SGJ/1402/OC9,V2.0	Core	3	2	0	60			60	0	0	120		120	12%

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)
	safety and hazards in this domain.															
10.	Employability Skills 60 Hrs	DGT/VSQ/N0102	Core	3	2	60	0			60	50	0			50	5%
Duration (in Hours) / Total Marks					15	150	300			450	200	680	120		1000	

Elective NOS/s: NA

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: NA

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

Minimum Pass Percentage – Aggregate at qualification level: Th. 60% & Pr70% (Every Trainee should score specified minimum aggregate passing percentage at qualification level to successfully clear the assessment.)

Minimum Pass Percentage – NOS/Module-wise: NA____% (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)	CTS/ATS (Fitter/Mason/Plumber) 5 years' experience OR Diploma (Mechanical Engineering / Civil Engineering) 3 years' experience OR B.Tech / B.E ((Mechanical Engineering) 2 years' experience OR B.Sc. (Agriculture) - 3 years' experience And Certified for Job Role: "Bio Gas Plant & Bio Slurry Technician" mapped to QP: "STC - EVN/NSQF-2018/801 OR SGJ/NSQF-2022/1402". Minimum accepted score is 80%. Recommended that the Trainer is certified for the Job Role: "Trainer (VET and Skills)", mapped to the Qualification Pack: "MEP/Q2601, v2.0". Minimum accepted score is 80%
2.	Master Trainer's Qualification and experience in the relevant sector (in years) (as per NCVET guidelines)	CTS/ATS (Fitter/Mason/Plumber) 5 years' experience OR Diploma (Mechanical Engineering / Civil Engineering) 3 years' experience OR B.Tech / B.E ((Mechanical Engineering) 2 years' experience OR B.Sc. (Agriculture) - 3 years' experience AND Certified for Job Role: "Bio Gas Plant & Bio Slurry Technician" mapped to QP: "STC - EVN/NSQF-2018/801 OR SGJ/NSQF-2022/1402". Minimum accepted score is 80%. And Certified on any domain skill of NSQF Level 5 with experience in training activities in similar field.
3.	Tools and Equipment Required for Training	√ ☐ Yes ☐ No (If "Yes", details to be provided in Annexure)
	In Case of Revised Qualification, Details of Any Upskilling Required for Trainer	NO

Section 4: Assessment Related

1.	Assessor's Qualification and experience in relevant sector (in years) (as per NCVET guidelines)	CTS/ATS (Fitter/Mason/Plumber) 5 years' experience OR Diploma (Mechanical Engineering / Civil Engineering) 3 years' experience OR B.Tech / B.E ((Mechanical Engineering) 2 years' experience OR B.Sc. (Agriculture) - 3 years' experience And Certified for Job Role: "Bio Gas Plant & Bio Slurry Technician" mapped to QP: SGJ/NSQF-2022/1402". Minimum accepted score is 80%. Recommended that the Assessor is certified for the Job Role: "Assessor (VET and Skills)", mapped to the Qualification Pack: "MEP/Q2701, v2.0". Minimum accepted score is 80%
2.	Proctor's Qualification and experience in relevant sector (in years) (as per NCVET guidelines)	CTS/ATS (Fitter/Mason/Plumber) 5 years' experience OR Diploma (Mechanical Engineering / Civil Engineering) 3 years' experience OR B.Tech / B.E ((Mechanical Engineering) 2 years' experience OR B.Sc. (Agriculture) - 3 years' experience
3.	Lead Assessor's/Proctor's Qualification and experience in relevant sector (in years) (as per NCVET guidelines)	CTS/ATS (Fitter/Mason/Plumber) 5 years' experience OR Diploma (Mechanical Engineering / Civil Engineering) 3 years' experience OR B.Tech / B.E ((Mechanical Engineering) 2 years' experience OR B.Sc. (Agriculture) - 3 years' experience
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

1.	Latest Skill Gap Study (not older than 2 years) (Yes/No): No
2.	Latest Market Research Reports or any other source (not older than 2 years) (Yes/No): Yes
3.	Government /Industry initiatives/ requirement (Yes/No): NO
4.	Number of Industry validation provided: 3
5.	Estimated nos. of persons to be trained and employed: 100
6.	Evidence of Concurrence/Consultation with Line Ministry/State Departments: Yes

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)	Yes in Model Curriculum
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)	Annexure 8
8.	Supporting Document: Model Curriculum (Mandatory – Public view)	Yes
9.	Supporting Document: Career Progression (Mandatory - Public view)	Yes in Q file
10.	Supporting Document: Occupational Map (Mandatory)	Yes in Q File
11.	Supporting Document: Assessment SOP (Mandatory)	Yes in Model Curriculum
12.	Any other document you wish to submit:	NO

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	- Identify appropriate site for installing BGP - To be able to Construct Bio Gas Plant - Install Cooking Apparatus - Post BGP construction activities - Preparation of Bio slurry manure and value addition - Marketing of organically grown crops	The individual is responsible for selection of suitable site in the farmers holding as per agro climatic and soil situation for all the six agro climatic zones namely 1. Hilly Region, 2. Terai Region, 3. Vinda Alluvial plain, 4. Gangetic Alluvial plain, 5. Red & Lateritic Western zone and 6. Saline Coastal zone of the state to construct bio gas plant. The individual should also be able to plan the size of BGP as per available input resources and plan for use of bio gas slurry in agri culture, hoti culture and fishery for making climate resilient agriculture activities as a whole.	3
Professional and Technical Skills/ Expertise/ Professional Knowledge	I. Identify appropriate site for installing BGP II. To be able to Construct Bio Gas Plant III. Install Cooking Apparatus IV. Post BGP construction activities V. Preparation of Bio slurry manure and value addition VI. Marketing of organically grown crops	The individual needs to have knowledge of construction dealing with inflammable gases as well as leakage free gas pipeline, its maintenance, training the users regarding does and don'ts as per agro climatic and soil condition of the state. Further the individual needs to know the crop management of different agriculture and horticulture crops with use of modern agricultural technology for growing organic crops and fishery. He should also know different use of Bio Slurry, its right dose etc. to grow different crops to manage fertility of different soils and to combat chemical pollution in agriculture.	3
Employment Readiness & Entrepreneurship Skills & Mind-set/Professional Skill	- Identify appropriate site for installing BGP - To be able to Construct Bio Gas Plant - Install Cooking Apparatus - Post BGP construction activities - Preparation of Bio slurry manure and value addition - Marketing of organically grown crops	The individual needs to have practical skills regarding construction of Bio Gas Plants at different soil and agro climatic conditions. He should also have practical skills to work with different Gas Pressure load as well as right mixture of bio gas from the BGPs. Further, he should also have the skill in guiding and demonstrating different crop cultivation with the use of Bio Slurry to increase and improve farmers' profit, productivity and take care of the environment as a whole.	3
Broad Learning	Understand and practice soft skills	The individual should have a basic skill to draw, design and guide	3

Outcomes/Core Skill	• Demonstrate knowledge of concept and principles of basic arithmetic and financial calculation, digital skill and apply knowledge of specific area to perform practical operations. • Explain time management, entrepreneurship and manage/organize related task in day to day work for personal & social growth.	the beneficiaries as well as the workers under him to construct the BGPs. He should also be able to communicate with the beneficiaries as well as the workers working under him for smooth execution of the BGPs as well as conducting demonstration of crops and fisheries with Bio Slurry. Finally he should have some mathematical skills for working out the cost benefit ratio of BGPs and future scope of Carbon Credit Business and possible integration of govt. agencies/ corporate houses to utilize the carbon credits generated through development of BGPs.	
Responsibility	• Apply safe working Practices • Identify appropriate site for installing BGP • To be able to Construct Bio Gas Plant • Install Cooking Apparatus • Post BGP construction activities • Preparation of Bio slurry manure and value addition • Marketing of organically grown crops • Understand and practice soft skills • Demonstrate knowledge of concept and principles of basic arithmetic and financial calculation, and apply knowledge of specific area to perform practical operations. • Explain time management, entrepreneurship and manage/organize related task in day to day work for personal & social growth	The individual has to take ownership of the work related to construction of BGPs. There would be couple of workers required for construction work of a Bio Gas Plant and the individual is required to supervise their work. Furthermore, all the decisions regarding design and construction materials depending on soil and agro climatic conditions has to be taken by the individual. Hence the particular qualification should be levelled at level 4.	3

Annexure2: Tools and Equipment (Lab Set-Up)

List of Tools and Equipment

Batch Size: 30

List of Tools & Equipment			
Bio Gas Plant & Bio Slurry Technician (for a Batch of 30 Candidates)			
S No.	Name of the Tools and Equipment	Specification	Quantity
1	Good quality bricks		550 pieces
2	Sand	Medium granules	60 cft
3	Cement	50 Kg	9 bags
4	Stone chips	1/2"	20cft
5.	Extrusion pipe	4' dia (2+2)	2 nos
6.	Steel rod	6 mm	5 kgs
7.	Spade		1 no
8.	Lid		1 no
9.	Container	15 ltr	2 nos
10.	Bucket	17 ltr	1 no
11	Iron hook		10 nos
12	Thread		500 gm
13	Woolen thread		250gms
14.	Wooden block	Of different size	As required
15	Karnik	Large, medium, small1	1 no each

16	Tram karnik		1 no
17	Rusho		1 no
18	Level pipe		30 ft
19	Matam		1no
20	Tape	3 mm	1 no
21	Nail	4"	As required
22	Compressor		1 no
23	1 1/2 GI pipe		12 ft
24	1/2"- 1 1/2" Thread dye machine		1 no
25	1/2" + 3/4"+1" Knives set		1 no
26	Pipe spanner	12" and 18"	1 no each
27	Gastone		2 nos
28	Spanner adjustable		2 nos
29	Plier		2 nos
30	Common Screw driver set		1 no
31	Spanner set	5-16	1 no
32	Measuring tape	30 ft	1 no
33	Hacksaw frame and blade		1 no each
34	Bench vice		1 no
35	Oven single and double		1 no each
36	Cube cork		2 nos

37	Ball valve		1 no
38	Gate valve		1 no
39	3/8" GI Pipe	20 ft	1 no
40	1/2 " GI Pipe	20 ft	1 no
41	1/2" HD PVC Pipe	20 ft	1 no
42	1/2" Push pipe	100 ft	1 no
43	1/2" union		1 no
44	3/4" - 1/2" GI Elbow		1 no
45	1/2"-3" GI Nipple		1 no
46	1/2" T		1 no
47	1/2" Elbow		1 no
48	1/2" Push elbow		1 no
49	1/2" Push socket		1 no
50	3/4" - 1/2" Push elbow		1 no
51	1/2' Pushunion		1 no
52	Sealing materials		250 gm
53	Hubbox		200 gm

Classroom Aids

The aids required to conduct sessions in the classroom are:

1. White Board
2. White board writing pen
3. Projector
4. Computer

Annexure3: 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.	Red Cow Dairy Pvt. Ltd	Bijan Bishnu	Asst. Manager	Nandan Housing Complex, Station Road, Hooghly	90730 22965	Bishnubijanfp7007@gmail.com	
2.	Krishna Chandra Dutta (Spice) Pvt Ltd	Dr.Dipan Chatterjee	Food technology & quality control manager		98305 65872	dipanchatterjee@cookme.com	
3.	M/s Foodies Agro	Mr. Monoj Mishra	Proprietor	Beharampur, Murshidabad	97751 86565	foodiesagro@rediffmail.com	

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
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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
V1	2019	20	20	20	20	----	----	----		----	----	----	----

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

1. State Level Short Term Program under “Utkarsh Bangla” Scheme.

Content availability for previous versions of qualifications:

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

Languages in which Content is available: English

Annexure 5: Blended Learning

Blended Learning Estimated Ratio & Recommended Tools: NA

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	NA	NA
2	☐ Imparting Soft Skills, Life Skills, and Employability Skills /Mentorship to Learners	NA	NA
3	☐ Showing Practical Demonstrations to the learners	NA	NA
4	☐ Imparting Practical Hands-on Skills/ Lab Work/ workshop/ shop floor training	NA	NA
5	☐ Tutorials/ Assignments/ Drill/ Practice	NA	NA
6	☐ Proctored Monitoring/ Assessment/ Evaluation/ Examinations	NA	NA
7	☐ On the Job Training (OJT)/ Project Work Internship/ Apprenticeship Training	NA	NA

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
SGJ/ 1402/OC1,V2.0	Identify Biomass resource and Bio-energy potential	10	80		
	1.1 Explain key concepts, and principles related to source biomass and bio energy.				
	1.2 Identify and select suitable biomass resources for specific bio energy generation applications including agricultural residues, forest biomass, and dedicated energy crops.				
	1.3 Justify biomass selection based on relevant criteria such as energy content, sustainability, and environmental impact.				
SGJ/ 1402/OC1,V2.0	1.4 Explain physical and chemical properties of various biomass types and their significance in bio energy production and utilization.				
	1.5 Describe various energy conversion methods used in bio energy production, such as combustion, gasification, and pyrolysis.				
	1.6 Describe the utilization of bio energy for power generation and domestic cooking.				
	1.7 Perform combustion tests to assess the energy potential and combustion behavior of selected biomass.				
	Total Marks	10	80		
SGJ/ 1402/OC2,V2.0	Illustrate mechanism of Biogas Systems	16	60		
	1.1 Describes the concept of biogas, highlighting key differences between biogas and LPG/CNG.				
	1.2 Conducts experiments or simulations to visually and conceptually illustrate the chemical reactions taking place during the bio methanation process.				
	1.3 Lists and explains the criteria and considerations for designing an effective biogas plant, including size, location, and feedstock requirements.				
SGJ/ 1402/OC2,V2.0	1.4 Differentiates between biogas plants designed for dung, vegetable waste, and municipal waste.				
	1.5 Demonstrates the ability to assess and confirm the availability of water resources near the biogas plant location for creating a water-dung solution.				
	1.6 Describes the step-by-step procedure for bottling biogas, including safety precautions and equipment involved.				
	1.7 Explains various methods of utilizing biogas as a fuel source for transportation, lighting, dual fuel engines, and electricity generation.				
	1.8 Demonstrates the construction of biogas plants tailored for dung, vegetable waste, and municipal waste.				

	1.9 Shows the setup and operation of a biogas bottling system, including the equipment involved, safety measures, and the step-by-step bottling procedure.				
	Total Marks	16	60		
SGJ/ 1402/OC3,V2.0	Explain the process of Biomass Gasifiers	20	60		
	3.1 Describes the principles and considerations involved in designing biomass gasifiers.				
	3.2 Explains the key differences between updraft and down draft gasifiers in terms of operation and efficiency				
	3.3 Explains the concept of zero-carbon biomass gasification plants and their environmental benefits along with the key components.				
	3.4 Physically or through models, demonstrates the construction of zero-carbon biomass gasification plants highlighting the layout and components necessary for minimizing carbon emissions.				
	3.5 Constructs a gasifier system for gasifying plastic-rich waste materials taking safety issues into consideration				
	3.6 Describes with model the concept of integrated biomass conversion processes, including gasification, pyrolysis, and liquefaction				
	3.7 Show the pre-treatment and processing steps for biomass feedstock with the methods used to prepare biomass for gasification.				
	3.8 Describes the production and use of bio-gasoline, bio-diesel, and dual fuel engines in power generation.				
	3.9 Demonstrate Electricity Generation Process from Biomass Gasifier, Engine Systems, Bio-Gasoline, Bio-Diesel, and Dual Fuel Engine with Charts/Videos:				
	Total Marks	20	60		
SGJ/ 1402/OC4,V2.0	Identify appropriate site for installing the BGP	20	60		
	4.1 Select suitable location based on factors such as avoidance of water inundation/marshy land/tall tree, availability of cow dung in nearby areas, maximum 200 ft. distance from kitchen point and a minimum 40 ft. distance from pond/river/ tube well etc.				
	4.2 Verify that water is available in the vicinity for making a water solution of dung to be given in the input inlet,				
	4.3 Confirm the availability of labour for giving daily input				
	4.4 Mix sufficient water to prepare input and also collect bio slurry output at regular interval,				
	4.5 Construct plastic/straw shed over bio slurry collection chamber and keep sufficient space to uplift & dry the collected bio slurry.				

	Total Marks	20	60		
	Construct a Bio Gas Plant with proper care and safety	28	210		
SGJ/ 1402/OC5,V2.0	5.1 Plan for fixed dome Dinabandhu Model family size Bio Gas Plant construction. 5.2 Apply the construction technology and materials as per soil and climatic condition of the State 5.3 Take the help of proper supervisory technical expert for BGP and trained masonry support which is essential 5.4 Demonstrate soil test to find the type of construction, 5.5 Finalized the area of minimum 150 sq ft. is required to construct the BGP. 5.6 Identify the construction materials which are required as per technical specification for a particular type of BGP for different agro-climatic condition. 5.7 Identify and finalized required man power with the dimensions. 5.8 Identify and finalized required man days for the same structure specification under Hill region. 5.9 Complete the Plant construction, the constructed structure has to be cured with water for 15 days. 5.10 Demonstrate a mixture of cow dung and water 1 kg each is to be given through inlet pipeline and the pipeline fittings has to be completed. 5.11 Exhibit the procedure the valve is to be closed for seven days and it is to be seen whether watery cow dung is coming out from the outlet pipeline. If it comes out, then 50 kg each of cow dung and water has to be given. 5.12 Checks to be made whether gas is coming out through the burner in the kitchen and if found that the gas is not flaming, the full air to be passed and after closing the valve, checks are to be made on the next day.				
	Total Marks	28	210		
	Install Cooking Apparatus	16	40		
SGJ/ 1402/OC6,V2.0	6.1 Install the Gas pipeline, regulator, Gas oven etc. Care to be taken to see that no ferrous metal is there in gas line as the Gas contains water vapour and hydrogen sulphide along with methane, which will cause corrosion of the gas line within very short time. 6.2 Illustrate dos& don'ts of this gas usage, 6.3 Maintain the gas line and other apparatus for security reasons.				
	Total Marks	16	40		
	Carry out post BGP construction activities	24	120		
SGJ/ 1402/OC7,V2.0	7.1 Determine of carbon credit development and avoidance of fertilizer				

	subsidy with use of Bio slurry and use of methane as a green substitute of LPG, wood, cattle dung and kerosene etc are to be worked out for each sub zone, using BGP. 7.2 Demonstrate the procedure step by step of the Plant maintenance which will be done on every 10th year on a regular basis.				
	Total Marks	24	120		
SGJ/ 1402/OC8,V2.0	Demonstrate the procedure of Bio slurry manure making and Marketing of Organically grown crops	16	50		
	8.1 Demonstrate the marketing procedure for organic product 8.2 Calculate the profit percentage for the selling the product in “Organic huts/markets”, 8.3 Identify the scope & way of e-commerce in selling the produce to the consumers.				
	Total Marks	16	50		
SGJ/ 1402/OC9,V2.0	Work in real job situation with special emphasis on basic safety and hazards in this domain.	0	0	120	
	9.1 Assessor will check report prepared for this component of Practical training of the course and assess whether competency has been developed to work in the real job situation with special emphasis on basic safety and hazards in this domain.				
	Total Marks	0	0	120	
DGT/VSQ/N0102	Employability Skills- 60 hrs.	50	0		
	As per NCVET guided curriculum				
	Grand Total	200	680	120	

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 WBSC TVE&SD for conducting the assessment online through Portal with two probable dates for Assessment
- WBSC TVE&SD deploys the ToA certified Assessor for executing the assessment
- WBSC TVE&SD monitors the assessment process & records

2. Testing Environment:

- Check the Assessment location, date and time
- If the batch size is more than 30, then Assessment will spill over to consecutive days.
- Check that the allotted time to the candidates to complete Theory & Practical Assessment is correct.

3. Assessment Quality Assurance levels/Framework:

- Question bank is created by the Subject Matter Experts (SME) are verified by the other SME
- Questions are mapped to the specified assessment criteria
- Assessor must be ToA certified.

4. Types of evidence or evidence-gathering protocol:

- reporting of the assessor from assessment location
- Centre photographs with signboards and scheme specific branding

5. Method of verification or validation:

- Surprise visit to the assessment location

6. Method for assessment documentation, archiving, and access

- Hard copies of the documents are stored

On the Job:

1. Each module will be assessed separately.
2. The pass criteria is as per norms set by WBSC TVE&SD in respect of Qualification Files
3. Tools of Assessment that will be used for assessing whether the candidate is having desired skills, understanding needs & requirements, and perform Soft Skills effectively:
 - Videos / portfolio of Trainees during OJT
4. Assessment of each Module will ensure that the candidate is able to:
 - Effective engagement with the stakeholders
 - Understand the working of various tools and equipment
 - Deliver the job assigned to him/her in conformity with job responsibility ascribed to Qualification File.

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

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