QUALIFICATION FILE

< Automated Metal Cutting Plasma Engineer >

☒ 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: 6

Submitted By:

< Capital Goods and Strategic Skill Council >
< 39, 1st Floor, Samyak Tower, Pusa Road, New Delhi-110005>

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Table of Contents

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Section 1: Basic Details

<table>
<tr><td>1.</td><td>Qualification Name</td><td colspan="2">Automated Metal Cutting Plasma Engineer</td></tr>
<tr><td>2.</td><td>Sector/s</td><td colspan="2">Capital Goods and Manufacturing</td></tr>
<tr><td>3.</td><td>Type of Qualification: ☒ New ☐ Revised ☐ Has Electives/Options
☐OEM</td><td>NQR Code & version of existing/previous qualification: (change to previous, once approved)</td><td>Qualification Name of existing/previous version:</td></tr>
<tr><td>4.</td><td>a. OEM Name
b. Qualification Name
(Wherever applicable)</td><td colspan="2"></td></tr>
<tr><td>5.</td><td>National Qualification Register (NQR) Code &Version
(Will be issued after NSQC approval)</td><td>QG-06-IT-04200-2025-V1-CGSC, v1.0</td><td>6. NCrF/NSQF Level: 6</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">An Automated Metal Cutting Plasma Engineer is a professional who specializes in using advanced machines that cut metal using high-temperature plasma.</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>04 year UG</td><td>Not required</td></tr>
<tr><td>2</td><td>UG Diploma</td><td>3 years of relevant experience</td></tr>
<tr><td>3</td><td>Previous relevant qualification of NSQF level 5.5</td><td>1.5 years of relevant experience</td></tr>
<tr><td>4</td><td>Previous relevant qualification of NSQF Level 5</td><td>3 years of relevant experience</td></tr>
</table>
b. Age: N/A</td></tr>
</table>

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<table>
<tr><td>10.</td><td>Credits Assigned to this Qualification, Subject to Assessment (as per National Credit Framework (NCrF))</td><td>22</td><td colspan="3">11. Common Cost Norm Category (I/II/III)
(wherever applicable): I</td></tr>
<tr><td>12.</td><td>Any Licensing requirements for Undertaking Training on This Qualification (wherever applicable)</td><td colspan="4"></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="4">☒Offline ☐Online ☐Blended
<table>
<tr><th>Training Delivery Modes</th><th>Theory (Hours)</th><th>Practical (Hours)</th><th>OJT Mandatory (Hours)</th><th>Viva (Hours)</th><th>Total (Hours)</th></tr>
<tr><td>Classroom (offline)</td><td>164</td><td>346</td><td>150</td><td>-</td><td>660</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="4">7412.0101</td></tr>
<tr><td>15.</td><td>Progression path after attaining the qualification (Please show Professional and Academic progression)</td><td colspan="4">• Automated Metal Cutting Plasma Technical Manager-Level 6.5
• Automated Metal Cutting Plasma Technical Head -Level 7</td></tr>
<tr><td>16.</td><td>Other Indian languages in which the Qualification & Model Curriculum are being submitted</td><td colspan="4">NA</td></tr>
<tr><td>17.</td><td>Is similar Qualification(s) available on NQR-if yes, justification for this qualification</td><td colspan="4">☐ 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="4">☐ Yes ☒ No
If “Yes”, specify applicable type of Disability:</td></tr>
<tr><td>19.</td><td>How Participation of Women will be Encouraged</td><td colspan="4">Yes via Industry or College Engagement</td></tr>
<tr><td>20.</td><td>Are Greening/ Environment Sustainability Aspects Covered (Specify the NOS/Module which covers it)</td><td colspan="4">☐ Yes ☒ No To be incorporated later</td></tr>
<tr><td>21.</td><td>Is Qualification Suitable to be Offered in Schools/Colleges</td><td colspan="4">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="4">Name: Hitesh
Email : technicaladvisors@cgssc.org Contact No.: +91-8882907092
Website: www.cgssc.org</td></tr>
</table>

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23.	Final Approval Date by NSQC: 8th May 2025	24. Validity Duration: 3 Years	25. Next Review Date: 8th April'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 curriculum document.

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

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.	Oversee the Setup of Automated Metal Cutting Plasma.	CSC/N0221: Version No. – 1.0	Core	6	3	30	60	-	-	90	40	40	-	20	100	20
2.	Select and implement automated CNC plasma cutting techniques for metal fabrication.	CSC/N0222: Version No. – 1.0	Core	6	6	34	86	60	-	180	40	40	-	20	100	20
3.	Post-Cutting Quality Check and Finishing	CSC/N0223: Version No. – 1.0	Core	6	7	36	84	90	-	210	40	40	-	20	100	20
4.	Employability Skills (60 hours)	DGT/VSQ/N0102-NOS	Non-Core	6	2	24	36	-	-	60	40	40	-	20	100	15

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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)*
		Version No. – 1.0														
5.	Collaboratively coordinate with the team.	CSC/N1339, v1.0	Non-Core	6	3	30	60	-	-	90	40	40	-	20	100	15
6.	Maintain Health, Safety and Environment at workplace.	CSC/N0505, v1.0	Non-Core	6	1	10	20	-	-	30	40	40	-	20	100	10
Duration (in Hours) / Total Marks					**22**	**164**	**346**	**150**		**660**	**240**	**240**	**-**	**120**	**600**	**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																

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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: 70 % *(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)*	B.E/B. Tech in Mechanical/ Electrical/Electronics/Automobile/Instrumentation with 4 years of relevant industry experience and 1 year of training experience OR M.E/M. Tech in Mechanical/ Electrical/Electronics/Automobile/Instrumentation with 3 years of relevant industry experience and 1 year training experience
2.	**Master Trainer's Qualification and experience in the relevant sector (in years)** *(as per NCVET guidelines)*	B. Tech in Mechanical/ Electrical/Electronics/Mechatronics with 6 years of relevant experience. OR M. Tech in Mechanical/ Electrical/Electronics/Mechatronics with 4 years of relevant experience.

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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**	

Section 4: Assessment Related

	Assessor's Qualification and experience in relevant sector (in years) *(as per NCVET guidelines)*	B.E/B. Tech in Mechanical/ Electrical/Electronics/Automobile/Instrumentation with 4 years of relevant industry experience and 1 year of training experience OR M.E/M. Tech in Mechanical/ Electrical/Electronics/Automobile/Instrumentation with 3 years of relevant industry experience and 1 year training experience
	Proctor's Qualification and experience in relevant sector (in years) *(as per NCVET guidelines)*	B.E/B. Tech in Mechanical/ Electrical/Electronics/Automobile/Instrumentation with 4 years of relevant industry experience and 1 year of training experience OR M.E/M. Tech in Mechanical/ Electrical/Electronics/Automobile/Instrumentation with 3 years of relevant industry experience and 1 year training experience
	Lead Assessor's/Proctor's Qualification and experience in relevant sector (in years) *(as per NCVET guidelines)*	B. Tech in Mechanical/ Electrical/Electronics/Mechatronics with 6 years of relevant experience. OR M. Tech in Mechanical/ Electrical/Electronics/Mechatronics with 4 years of relevant experience.
	Assessment Mode *(Specify the assessment mode)*	**Formative, Summative & Skill Assessment**
	Tools and Equipment Required for Assessment	☒ Same as for training ☐ Yes ☐ No *(details to be provided in Annexure-if it is different for Assessment)*

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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):** No
2.	**Latest Market Research Reports or any other source (not older than 2 years) (Yes/No):** No (Industry driven)
3.	**Government /Industry initiatives/ requirement (Yes/No):** Yes
4.	**Number of Industry validation provided:** 5
5.	**Estimated nos. of persons to be trained and employed:** 96
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 *(Mandatory)*	*Q File*
2.	**Annexure:** List of tools and equipment relevant for qualification *(Mandatory, except in case of online course)*	*Q File*
3.	**Annexure:** Detailed Assessment Criteria *(Mandatory)*	*Q File*
4.	**Annexure:** Assessment Strategy *(Mandatory)*	*Q File*
5.	**Annexure:** Blended Learning *(Mandatory, in case selected Mode of delivery is "Blended Learning")*	*Yes Provided*
6.	**Annexure:** Multiple Entry-Exit Details *(Mandatory, in case qualification has multiple Entry-Exit)*	*Yes Provided*
7.	**Annexure:** Acronym and Glossary *(Optional)*	*Yes Provided*
8.	**Supporting Document:** Model Curriculum *(Mandatory – Public view)*	*Yes Provided*
9.	**Supporting Document:** Career Progression *(Mandatory - Public view)*	*Yes Provided*
10.	**Supporting Document:** Occupational Map *(Mandatory)*	*Yes Provided*
11.	**Supporting Document:** Assessment SOP *(Mandatory)*	*Yes Provided*

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12.	**Any other document you wish to submit:**	*NA*

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	Plasma Technology: Understanding of plasma cutting principles, including plasma arc generation, plasma arc control, and plasma cutting process optimization. Automated Systems: Familiarity with automated systems, including robotic welding systems, CNC machining centers, and automated material handling systems. Metal Cutting: Knowledge of metal cutting processes, including plasma cutting, laser cutting, waterjet cutting, and oxy-fuel cutting. Metallurgy: Understanding of metal properties, including strength, toughness, and corrosion resistance. Quality Control: Familiarity with quality control procedures, including inspection, testing, and documentation. Safety: Understanding of safety protocols, including personal protective equipment (PPE), lockout/tagout procedures, and electrical safety.	An Automated Metal Cutting Plasma Engineer must have a comprehensive understanding of the theoretical principles of plasma cutting technology, including the physics of plasma generation and behavior, as well as materials science relevant to cutting different types of metals. This includes knowledge of the properties of various metals and alloys, heat treatments, and how these factors influence cutting processes and outcomes. Hence NSQF level for this descriptor is 6.	**6**
Professional and Technical Skills/ Expertise/ Professional Knowledge	Knowledge of automated metal cutting plasma technology and its applications Understanding of welding processes, including plasma cutting, arc welding, and gas metal arc welding Familiarity with CNC programming and control systems Knowledge of mechanical systems, including bearings, motors, and gears Understanding of electrical systems, including circuitry, wiring, and electrical safety Familiarity with hydraulic systems and fluid dynamics Knowledge of metrology and precision measurement techniques	An Automated Metal Cutting Plasma Engineer is expected to possess a blend of advanced professional knowledge, technical and professional skills, and a high level of accountability and leadership. Mastery of these competencies enables engineers to perform their roles effectively while contributing to the overall productivity and quality standards of their organizations.	**6**

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	Understanding of quality control and inspection procedures	This alignment with the NCrF/NSQF descriptors highlights the importance of structured educational and professional development pathways in enhancing workforce capabilities within the manufacturing and engineering sectors.	
Employment Readiness & Entrepreneurship **Skills & Mind-set/Professional Skill**	Job-specific skills: Ability to operate and maintain automated metal cutting plasma systems, including programming, troubleshooting, and maintenance. Technical skills: Familiarity with computer-aided design (CAD) software, programming languages, and robotic systems. Problem-solving skills: Ability to identify and resolve problems with automated metal cutting plasma systems, including troubleshooting and debugging. Communication skills: Ability to communicate effectively with colleagues, supervisors, and customers to ensure seamless operation of automated metal cutting plasma systems. Time management skills: Ability to prioritize tasks and manage time effectively to meet deadlines and optimize production efficiency. Teamwork skills: Ability to work collaboratively with other technicians, engineers, and production staff to ensure successful operation of automated metal cutting plasma systems. Adaptability skills: Ability to adapt to new technologies, processes, and procedures in a rapidly changing industry.	The job role of an Automated Metal Cutting Plasma Engineer relates closely to NSQF Level Descriptor 6 in terms of technical skills, problem-solving capabilities, and preparedness for employment. Additionally, entrepreneurship skills such as business management, risk management, and innovation are key for success in this field, aligning with the comprehensive competencies expected at level 6 of the NCrF/NSQF framework.	**6**
Broad Learning Outcomes/Core Skill	Technical Skills: Troubleshooting and fault finding in automated metal cutting plasma systems Performing routine maintenance and repairs on plasma cutting machines Setting up and operating plasma cutting machines Understanding plasma cutting processes and techniques Familiarity with CNC programming and operation	For the Automated Metal Cutting Plasma Engineer, level 6 NCrF/NSQF outcomes and core skills can be described as follows: Design and set up automated metal cutting plasma machines for various	**6**

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	Operational Skills: Operating and maintaining automated metal cutting plasma systems Reading and interpreting blueprints and technical drawings Understanding safety protocols and procedures Working safely and efficiently in a production environment	applications, considering machine capabilities, material properties, and manufacturing requirements. Identify and diagnose issues with automated metal cutting plasma machines and processes and implement corrective actions to minimize downtime and optimize performance.	
Responsibility	Operate and maintain automated metal cutting plasma systems: Ensure that the systems are functioning correctly, making adjustments as needed, and performing routine maintenance tasks. Troubleshoot and repair equipment: Identify and resolve problems with the equipment, including plasma cutting torches, control systems, and conveyors. Conduct quality control checks: Verify that the cut products meet quality standards, inspecting for defects, and making adjustments to ensure optimal product quality. Develop and implement process improvements: Analyze production processes, identify areas for improvement, and implement changes to increase efficiency, reduce costs, and enhance product quality. Collaborate with other departments: Work with production planners, quality control inspectors, and other teams to ensure smooth production operations and coordinate activities. Maintain accurate records: Keep records of equipment maintenance, production data, and quality control checks to ensure compliance with regulatory requirements. Train and mentor junior staff: Share knowledge and skills with junior technicians, providing guidance on equipment operation, maintenance, and troubleshooting.	The job role and outcomes of the Automated Metal Cutting Plasma Engineer align with the NCRF/NSQF Level 6 descriptor, as they demonstrate the following: High level of autonomy and responsibility in managing complex technical operations and processes. Advanced knowledge and skills in metal cutting plasma technology, including troubleshooting and maintenance of specialized equipment. Ability to provide technical guidance and support to other team members. Participation in continuous improvement initiatives. Informed decision-making and problem-solving skills.	**6**

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Annexure: Tools and Equipment (Lab Set-Up)

List of Tools and Equipment

Batch Size: 20-25 Nos

S. No.	Tool / Equipment Name	Specification	Quantity for specified Batch size
1	Chairs/Tables	Standard	25
2	Computer with internet	Standard	25
3	LCD projector with screen	Standard	1
4	Trainer chair and Table	Standard	1
5	Demonstration table pin up boards	Standard	1
6	White board with marker	Standard	1
7	Plasma Cutting Equipment	Plasma cutting machines (e.g., Hypertherm, Kjellberg, Thermal Arc) Plasma cutting torches (e.g., Hypertherm, Kjellberg, Thermal Arc) Plasma cutting accessories (e.g., consumables, electrodes, hoses) Plasma cutting controllers (e.g., Hypertherm, Kjellberg, Thermal Arc) Safety equipment for plasma cutting (e.g., protective gear, ventilation systems)	1
8	Automation and Robotics	Robotic welding systems (e.g., KUKA, ABB, FANUC)	1

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		CNC controllers for robotic welding systems (e.g., KUKA, ABB, FANUC) End effectors for robotic welding systems (e.g., torches, guns) Welding machine controls (e.g., Siemens, ABB, GE Fanuc) Sensor and vision systems (e.g., Cognex, Keyence, Baumer)	
9	Measurement and Inspection Equipment	Multimeters (e.g., Fluke, Agilent) Welding current analyzers (e.g., ESAB, Lincoln Electric) Thermal imaging cameras (e.g., FLIR, FLUKE) Acoustic emission testing equipment (e.g., AE Sensors) Weld penetration and depth gauges (e.g., Olympus, Mitutoyo)	1
10	Hand Tools and Equipment	Wrenches and sockets for maintenance and repair Torque wrenches and socket sets Pliers and wire cutters for troubleshooting Multitools for general maintenance Welding machines and equipment accessories (e.g., leads, cables, connectors)	1
11	Specialized Equipment	Welding positioners and clamping systems Part fixtures and holding systems Welding automation testing equipment (e.g., test pieces, welding guns) Quality control inspection equipment (e.g., measuring instruments, inspection cameras) Environmental monitoring equipment (e.g., temperature sensors, humidity sensors)	1
12	Fire Extinguisher	Standard	1
13	Safety Gloves(Rubber)	Standard	25
14	Ear Plugs	Standard	25

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15	Safety Shoes & Helmet	Standard	25
16	Goggles	Standard	25
17	First-Aid Kit	Standard	2

Classroom Aids

The aids required to conduct sessions in the classroom are:

1. Computer / Laptop
2. Whiteboard and marker
3. Projector

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	Broadline Computer Systems	Prabhakaran	Manager R&D	No7, 2nd Floor Khader Nawaz Khan Road, Nungambakkam, Chennai	044 28333083	contact@broadline.co.in	
2	Jain Laboratory Instruments	Ravi Jain	Director	449, HSIIDC, Industrial Area Saha, Haryana	8569909696	sales@jlabexport.com	
3	Marathwada Autocluster	Sudarshan Dhavurkar	Center In charge	P-174, MIDC Waluj	8237272802	macluster@gmail.com	
4	Mindbridge Innovations	Aruna Anchal	General Manager	New Delhi			
5	TANSAM	Sukhpreet Singh	CEO	6th floor, Tidel Park, Chennai	4469255700	info@tansam.org	

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Annexure: Training & Employment Details

Training and Employment Projections:

Year	Total Candidates		Women		People with Disability	
	Estimated Training #	Estimated Employment Opportunities	Estimated Training #	Estimated Employment Opportunities	Estimated Training #	Estimated Employment Opportunities
2025-2026	96	87	62	43	6	4
2026-2027	96	75	68	48	7	5
2027-2028	96	81	75	53	8	5

Data to be provided year-wise for next 3 years

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

Qualification Version	Year	Total Candidates				Women				People with Disability			
		Trained	Assessed	Certified	Placed	Trained	Assessed	Certified	Placed	Trained	Assessed	Certified	Placed

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: *NA*

1.
2.

Content availability for previous versions of qualifications: NA

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

Languages in which Content is available:

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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

Annexure: Detailed Assessment Criteria

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

CSC/N: Oversee the Setup of Automated Metal Cutting Plasma.

Assessment Criteria for Outcomes	Theory Marks	PracticalMarks	ProjectMarks	Viva Marks
Perform automated metal cutting plasma by inspecting equipment, preparing materials, and configuring cutting programs for efficient operation.	**10**	**10**	**-**	**6**
PC1. Inspect the plasma cutting machine, ensuring all components are in good condition and properly functioning. This includes the cutting torch, power supply,	3	2	-	2

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CNC controller, gas supply, and any safety features.				
PC2 Prepare the metal sheets or work pieces to be cut. This involves ensuring they are clean, free from any contaminants, and properly positioned on the cutting table or fixture.	3	4	-	2
PC3 Load the cutting program into the CNC controller or computer interface. Verify that the program includes the correct cutting parameters such as cutting speed, amperage, gas flow rates, and pierce delay.	4	4	-	2
Set up Gas supply to the plasma cutting machine & do the alignment	**15**	**15**	**-**	**10**
PC4. Select the appropriate gas for the cutting process based on the material being cut. Common gases used include oxygen, nitrogen, and argon, each offering different advantages depending on the application	5	5	-	3
PC5. Set the gas pressure and flow rates according to the manufacturer's recommendations and the requirements of the cutting program. Proper gas control is crucial for achieving clean and accurate cuts.	5	5	-	3
PC6. Ensure the cutting torch is properly positioned and aligned with the starting point of the cut on the work piece. Proper alignment helps to prevent errors in the cutting path and ensures consistent quality.	5	5	-	4

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Assessment Criteria for Outcomes	TheoryMarks	PracticalMarks	ProjectMarks	Viva Marks
Prepare and set up automated metal cutting plasma systems with a focus on safety measures, test cuts, and quality control for optimal operation.	**15**	**15**	**-**	**4**
PC7. Implement safety measures to protect personnel and equipment during operation. This includes wearing appropriate personal protective equipment (PPE), installing safety guards, and ensuring emergency stop buttons are easily accessible.	5	4	-	1
PC8. Conduct test cuts on scrap material to verify the cutting parameters and make any necessary adjustments before proceeding with the actual cutting job.	6	6	-	1
PC9. Monitor the cutting process closely to ensure the desired cut quality is achieved. This involves checking for smooth edges, minimal dross (residue), and accurate dimensions according to the specification	4	4	-	1
NOS Total	**40**	**40**	**-**	**20**

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CSC/N : Select and implement automated CNC plasma cutting techniques for metal fabrication.

Assessment Criteria for Outcomes	TheoryMarks	PracticalMarks	ProjectMarks	Viva Marks
Prepare and set up automated metal cutting plasma systems with a focus on safety measures, test cuts, and quality control for optimal operation	**10**	**10**	**-**	**6**
PC1. Ensure the technique selected is appropriate for the specific material being cut.	3	2	-	2
PC2. Consider the thickness of the metal to be cut and choose a technique that can handle it efficiently	3	4	-	2
PC3. Ensure desired quality of the cut influences the selection of the plasma cutting technique	4	4	-	2
Evaluate productivity and accuracy considering machine automation	**15**	**15**	**-**	**10**
PC4.Evaluate the cutting speed and productivity of the technique to ensure it meets production demands while maintaining quality standards.	5	5	-	3

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PC5. Look for techniques that offer high precision and accuracy in cutting.	5	5	-	3
PC6. Consider the level of automation required based on production volume, complexity of cuts, and available budget.	5	5	-	4

Assessment Criteria for Outcomes	Theory Marks	PracticalMarks	ProjectMarks	Viva Marks
Maximize efficiency and precision in automated metal cutting plasma techniques through advanced software utilization while minimizing environmental impact.	**15**	**15**	**-**	**4**
PC7. Choose systems with user-friendly interfaces and advanced features for efficient operation.	6	6	-	2
PC8. Evaluate the longevity of consumables and the ease of maintenance when selecting a plasma cutting technique	5	4		1
PC9. Choose techniques that minimize environmental footprint while maintaining performance	4	5	-	1

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NOS Total	**40**	**40**	**-**	**20**

CSC/N: Post-Cutting Quality Check and Finishing .

Assessment Criteria for Outcomes	Theory Marks	PracticalMarks	Project Marks	Viva Marks
Verify dimensional accuracy, edge quality, and conformity to specifications for quality assurance. Networking.	**10**	**10**	**-**	**7**
PC1. Check for defects like dross, slag, and rough edges.	3	3	-	2
PC2. Verify measurements align with specifications using precise tools .	3	3	-	2
PC3. Assess roughness and integrity of the cut surface	4	4	-	3
Ensure Finishing processes, including deburring and surface treatment, stem	**15**	**15**	**-**	**9**
PC4. Ensure edges are smooth and free from burrs.	5	5	-	3

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PC5. Confirm actual thickness matches specifications	5	5	-	3
PC6. Check angles, radii, and other geometric features	5	5	-	3

Assessment Criteria for Outcomes	Theory Marks	PracticalMarks	Project Marks	Viva Marks
Ensure Quality metrics and continuous improvement	**15**	**15**	**-**	**4**
PC7 Apply coatings or treatments uniformly as specified	5	5	-	2
PC8. Ensure adequate measures are taken to prevent corrosion	5	5	-	1
PC9. Maintain accurate records of inspection results and processes	5	5	-	1
NOS Total	**40**	**40**	**-**	**20**

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DGT/VSQ/N0102: Employability Skills (60 Hours)

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
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	-	-	-	-

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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**	**-**	**-**

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks

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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	-	-	-	-

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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				

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	-	-	-	-
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)	-	-	-	-
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	-	-	-	-

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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	-	-	-	-
NOS Total	20	30	-	-

CSC/N1339: Collaboratively coordinate with the team

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Communicate effectively at the workplace	**7**	**20**	**-**	**-**
PC1. exchange information and instruction with colleagues, and seek clarifications and feedback	-	-	-	-
PC2. assist colleagues where required	-	-	-	-
PC3. follow business communication etiquette in all interactions and communicative formats (online, digital, and in-person)	-	-	-	-
PC4. document and share all relevant information with stakeholders in agreed formats and as per agreed timelines	-	-	-	-

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Work effectively	**7**	**20**	**-**	**-**
PC5. identify and obtain clarity regarding organisational, team and own goals and targets	-	-	-	-
PC6. prioritise and plan work in order to achieve goals and targets	-	-	-	-
PC7. monitor own and team performance as per agreed plan	-	-	-	-
PC8. complete duties accurately, systematically and within required timeframes	-	-	-	-
PC9. express emotions appropriately at the workplace and manage own response to heightened emotions	-	-	-	-
PC10. maintain orderliness and cleanliness in the work area Maintain and enhance professional competence	-	-	-	-
PC11. identify own strengths and weaknesses in relation to goals and targets	-	-	-	-
PC12. adapt self, service, or product to meet success criteria	-	-	-	-
PC13. seek and select opportunities for continuous professional development	-	-	-	-

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PC14. formulate a professional development plan to enhance capabilities	-	-	-	-
PC15. build or contribute to the organizational knowledge base of cases, clients, issues, solutions, and innovations	-	-	-	-
PC16. examine developments and trends in field of work and their potential impact on work	-	-	-	-
PC17. take feedback from peers, supervisors and clients to improve own performance and practices	-	-	-	-
Work in a disciplined and ethical manner	8	20	-	-
PC18. perform tasks as per workplace standards, organizational policies and legislative requirements	-	-	-	-
PC19. display appropriate professional appearance at the workplace and adhere to the organizational dress code	-	-	-	-
PC20. demonstrate responsible and disciplined behavior at the workplace such as punctuality; completing tasks as per given time and standards; demonstrating professional behavior at all times, adopting environment- friendly practices, etc.	-	-	-	-
PC21. identify the cause of conflict and options for resolution with peers or escalate grievances and problems to appropriate authority as per procedure for conflict resolution				

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	-	-	-	-
PC22. protect the rights of the client and organization when delivering services	-	-	-	-
PC23. ensure services are delivered equally to all clients regardless of personal and cultural beliefs	-	-	-	-
PC24. operate within an agreed ethical code of practice and report unethical conduct to the appropriate authorities	-	-	-	-
PC25. follow organizational guidelines and legal requirements on disclosure and confidentiality	-	-	-	-
Uphold social diversity at the workplace	8	10	-	-
PC26. recognize and evaluate biased practices against underrepresented groups like women and persons with disabilities, in workplace systems and processes	-	-	-	-
PC27. identify and report discrimination and harassment based on gender, disability, or cultural difference at the workplace	-	-	-	-

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PC28. use inclusive or neutral language and gestures in all interactions	-	-	-	-
PC29. respect the personal and professional space of others	-	-	-	-
PC30. access grievance redressal mechanisms as per legislations	-	-	-	-
NOS Total	30	70	-	-

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CSC/N0505 – Follow Health , Safety and Environment guidelines at workplace

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Adhere to standard safety procedures of the organisation	**7**	**10**	**-**	**-**

PC1. comply with general safety procedures and those for handling equipment, tools, chemicals, and hazardous material, as prescribed and followed in the organisation	-	-	-	-
PC2. remove finger rings or any other metal objects likely to interfere with the work	-	-	-	-
PC3. ensure that identification badge or any other object worn around the neck or on the clothing does not get caught in any rotating machine, or otherwise interfere with the work	-	-	-	-
PC4. use appropriate safety devices such as goggles, gloves, ear plugs, caps, ESD pins, covers, shoes, helmets etc. recommended for the work being performed	-	-	-	-
PC5. inform, escalate, or raise alarm about any suspicions, unaccounted hazardous material, devices, or other objects found in the premises	-	-	-	-
PC6. inform, escalate, or raise alarm about any breach of safety or security procedure in the organisation	-	-	-	-
PC7. help achieve zero accidents goals at work	-	-	-	-
PC8. avoid damage to sensitive electronic components due to negligence of ESD procedures	-	-	-	-

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PC9. participate regularly in fire drills or other safety related workshops organised by the organisation	-	-	-	-
PC10. follow strictly all access control and perimeter safety procedures in designated factory areas such as robotic work stations, automated production lines, automated material movement and other potentially risky operations	-	-	-	-
PC11. ensure that other people follow all access control and perimeter safety procedures in designated factory areas and help avoid accidents	-	-	-	-
PC12. use emergency switches or other mechanisms of stopping a machine immediately in case any emergency situation has developed or about to happen	-	-	-	-
PC13. ensure that electrical equipment are properly grounded	-	-	-	-
PC14. follow Cyber Security guidelines and be vigilant at workplace	-	-	-	-
PC15. proceed to designated safe assembly area immediately on hearing fire alarm	-	-	-	-
Follow healthy practices and posture	**8**	**10**	**-**	**-**

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PC16. wash hands and use sanitizers as recommended to prevent spread of diseases	-	-	-	-
PC17. follow common personal hygiene practices	-	-	-	-
PC18. maintain appropriate posture, especially in long hours of sitting or standing position and in handling heavy materials	-	-	-	-
PC19. participate in company organised health sessions such as exercises, games, yoga, physiotherapy, and other activities	-	-	-	-
PC20. handle heavy and hazardous materials with care, while maintaining appropriate posture, using suitable tools, and handling equipment such as trolleys, jacks, and ladders	-	-	-	-
PC21. learn and apply first aid devices available in the workplace	-	-	-	-
PC22. learn and apply safety and handling procedures for electrical shock and electrocution	-	-	-	-
PC23. learn and apply emergency medical help services	-	-	-	-
PC24. follow workplace decorum and avoid emotional outbursts or inappropriate language	-	-	-	-
PC25. prevent any harassment at workplace	-	-	-	-

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Practice waste management and recycling	-	-	-	-
PC26. identify recyclable, non-recyclable, and hazardous waste generated in the workplace and comply with their disposal procedures	-	-	-	-
PC27. dispose non-recyclable waste and hazardous waste following recommended processes	-	-	-	-
PC28. deposit recyclable and reusable material at identified locations	-	-	-	-
PC29. support education and compliance of waste management processes	-	-	-	-
Conserve material and resources	-	-	-	-
PC30. identify ways to optimize usage of material and resources such as water, electricity, energy in various tasks, activities, and processes	-	-	-	-
PC31. check for spills and leakages of material in various tasks, activities, and processes and plug them	-	-	-	-
PC32. escalate the leakage issue to appropriate authority if needed	-	-	-	-
PC33. carry out routine cleaning of tools, machines, and equipment and maintain them in good working condition to optimize efficiency and wastage	-	-	-	-

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PC34. check if the equipment is functioning normally before commencing work and rectify or report any malfunctioning to the responsible agency	-	-	-	-
PC35. check for any odour, sparks, fumes, emission, unusual vibration, noise, or any other objectionable presence in the environment and take immediate corrective action followed by report to responsible agency	-	-	-	-

Assessment Parameters:

Assessment Plan:

1. Components of Assessment:

- Each subject will be assessed in three components: Theory (40% weightage), Practical (40% weightage), and On-job Training (OJT, 20% weightage).

2. Passing Parameters:

- To pass the semester, students must meet both the assessment parameters given below.

Parameter 1 - Weighted Semester Score:

- Students must achieve a minimum of 60% in the weighted average score across all three components (Theory, Practical, and OJT) for each subject.

Parameter 2 - Individual Component Score:

- Students need to score at least 40% in each individual component (Theory, Practical, and OJT) of every subject.

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.

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Mention the detailed assessment strategy in the provided template.

<1. Assessment System Overview:

- Batches assigned to the assessment agencies for conducting the assessment on 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:

- Check the Assessment location, date and time
- 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.

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 & trainer must be ToT Certified

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

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 (which covers the job profile of Automated Metal Cutting Plasma Engineer) will be assessed separately.
2. The candidate must score 60% 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 perform Soft Skills effectively:
   • Videos of Trainees during OJT
   •
4. Assessment of each Module will ensure that the candidate is able to:

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- Effective engagement with the customers
- Understand the working of various tools and equipment
- …..>

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

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