सूक्ष्म, लघु एवं मध्यम उद्यम मंत्रालय
DEVELOPMENT COMMISSIONER
MINISTRY OF MICRO, SMALL & MEDIUM ENTERPRISES

MSME TECHNOLOGY CENTRE

Please referGuidelines for STT/LTT/Apprenticeship/OEM Qualification File

QUALIFICATION FILE

Glass Manufacturing Technician

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

☐Up skilling☐ Dual/Flexi Qualification ☐For ToT☐ForToA

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

NCrF/NSQF Level: 4.0

Submitted By:

MSME TECHNOLOGY CENTRE
O/o DC MSME, Ministry of Micro, Small and Medium Enterprises
Govt. of India
A-Wing, 7th Floor, Nirman Bhawan, Maulana Azad road,
New Delhi-110108
Contact No. +91-674-2654700,
Email-msmetcab@gmail.com

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Section 1: Basic Details

<table>
<tr><td>1.</td><td>Qualification Name</td><td colspan="2">Glass Manufacturing Technician</td></tr>
<tr><td>2.</td><td>Sector/s</td><td colspan="2">Glass & Ceramic</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>NQR Code & version of existing/previous qualification: (change to previous, once approved)</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</td><td>QG-04-GC-04164-2025-V1-MSMETC</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">After attaining this qualification learner will be able to:
The course 'Advanced Certificate Course in Glass Manufacturing Practices' has been introduced to generate skilled manpower to work in the field of glass manufacturing with latest technology as per the industrial requirement and expectations.
• The aim of this Training Program is to prepare the trainees to meet the Industrial Expectation in the field of glass manufacturing.
• Overall objective of this course to get the trainees acquainted with the modern glass manufacturing processes by providing hands-on training with the application of modern equipments& machines to enhance the practical skills.
•</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>11th grade pass or Equivalent</td><td>Nil</td></tr>
<tr><td>2</td><td>Completed / Pursuing 2nd year of 3-year diploma (after 10th)</td><td>Nil</td></tr>
<tr><td>3</td><td>10th grade pass with two years of any combination of NTC/NAC/CITS or equivalent.</td><td>Nil</td></tr>
<tr><td>4</td><td>Previous relevant Qualification of NSQF Level 3.5</td><td>1.5 year relevant experience</td></tr>
</table></td></tr>
</table>

		b. Age: 18 Years.	
10.	**Credits Assigned to this Qualification, Subject to Assessment***(as per National Credit Framework (NCrF))*	**40**	**11. Common Cost Norm Category (I/II/III)** *(wherever applicable)***: I**
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** **Training Delivery Modes** / **Theory (Hours)** / **Practical (Hours)** / **OJT Mandatory (Hours)** / **OJT Recommended (Hours)** / **Total (Hours)** **Classroom (offline)** / 630 / 330 / 240 / - / 1200 **Total** / 630 / 330 / 240 / - / 1200 *(Refer Blended Learning Annexure for details)*	
14.	**Aligned to NCO/ISCO Code/s***(if no code is available mention the same)*	**3122.0800(Glass Plant Senior Technician)**	
15.	**Progression path after attaining the qualification** *(Please show Professional and Academic progression)*	**Professional Progress: Glass Plant Supervisor**	
16.	**Other Indian languages in which the Qualification & Model Curriculum are being submitted**	**Hindi**	
17.	**Is similar Qualification(s) available on NQR-if yes, justification for this qualification**	**☐ Yes ☒ No URLs of similar Qualifications:**	
18.	**Is the Job Role Amenable to Persons with Disability**	**☐Yes ☒ No** **If "Yes", specify applicable type of Disability: As per govt. Norms.**	
19.	**How Participation of Women will be Encouraged**	Admission open to women candidates (33% seats reserved)	
20.	**Are Greening/ Environment Sustainability Aspects Covered** *(Specify the NOS/Module which covers it)*	**☒Yes ☐No** The said aspect is covered in the module name Employability Skill.	

21.	**Is Qualification Suitable to be Offered in Schools/Colleges**	**Schools ☐ Yes☒ NoColleges ☒ Yes ☐ No** **Subject to availability of resources.**	
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: Sh. Vijay Mahipatrao Bankar** **Contact No. +0755 3501078** **Email-msmetcab@gmail.com**	
23.	**Final Approval Date by NSQC: 8th May 2025**	**24.Validity Duration:**	**25. Next Review Date:8th May 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*

SEMESTER-I

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	Basic Science and Math	MSME/TGM/ 01 & Version 1.0	Non-core	4	4	60	60	-	-	120	100	100	-	-	200	
2	Glass Raw Materials & Batch Preparation	MSME/ TGM / 02 & Version 1.0	Core	4	5	90	60	-	-	150	100	100	-	-	200	
3	Glass Manufacturing Process	MSME/ TGM / 03 & Version 1.0	Core	4	4	60	-	60	-	120	100	100	-	-	200	
4	Glass forming Techniques	MSME/ TGM / 04 & Version 1.0	Core	4	4	60	-	60	-	120	100	100	-	-	200	
5	Entrepreneurship Development / Quality Management System	MSME/ TGM / 05 & Version 1.0	Non-core	4	3	90	-	-	-	90	100	-	-	100	200	
Duration (in Hours) / Total Marks					**20**	360	120	120	-	600	500	400	-	100	1000	

SEMESTER- II

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	Introduction to Operation of Glass plant machinery / Equipments	MSME/ TGM / 06 & Version 1.0	Core	4	3	30	60	-	-	90	100	100	-	-	200	
2	Furnace Operation	MSME/ TGM / 07 & Version 1.0	Core	4	5	30	60	60	-	150	100	100	-	-	200	
3	Automatic Process of Glass Manufacturing(Control System)	MSME/ TGM / 08 & Version 1.0	Core	4	5	30	60	60	-	150	100	100	-	-	200	
4	Project Work	MSME/ TGM / 09 & Version 1.0	core	4	3	60	30	-	-	90	-	-	100	-	100	
5	**Employability Skill**	**MSME/ES /10**	Non-core	4	4	120	-	-	-	120	100	-	-	-	100	
Duration (in Hours) / Total Marks					**20**	270	210	120	-	600	400	300	100	-	800	

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)*

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)*

Assessment - Minimum Qualifying Percentage:

Specifyany one of the following:

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

Minimum Marks to pass Theory Exam: 40%
Minimum Marks to pass Practical Exam: 60%

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.)*

Minimum Marks to pass Theory Exam: 40%
Minimum Marks to pass Practical Exam: 60%

Section 3: Training Related

1.	Trainer's Qualification and experience in the relevant sector (in years)(as per NCVET guidelines)	Diploma/ Degree in Glass and Ceramic engineering/AIME or Equivalent with Practical skills and knowledge required in the relevant job role at least one level high-rise level 4.5 and above in related field and minimum 2 years of experience in relative sector or related education institute OR Training Department from Tool Room/ Technology Centre of MSME or any reputed industry.
2.	Master Trainer's Qualification and experience in the relevant sector (in years) (as per NCVET guidelines)	Degree in Glass and Ceramic engineering/AIME/M.Tech. or equivalent with 3 to 5 years of experience in relative sector or related education institute OR Training Department from Tool Room/ Technology Centre of MSME or any reputed industry.
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	No

Section 4: Assessment Related

1.	**Assessor's Qualification and experience in relevant sector (in years)** *(as per NCVET guidelines)*	Diploma / Degree in Engineering (Glass & Ceramic Engineering/Ceramic Engineering) or equivalent with 3 years of experience in relative sector or related education institute OR Training Department from Tool Room/ Technology Centre of MSME or any reputed industry.
2.	**Proctor's Qualification and experience in relevant sector (in years)** *(as per NCVET guidelines)*	Diploma / Degree in Engineering (Glass & Ceramic Engineering/Ceramic Engineering) or equivalent with 3 years of experience in relative sector or related

		education institute OR Training Department from Tool Room/ Technology Centre of MSME or any reputed industry.
3.	**Lead Assessor's/Proctor's Qualification and experience in relevant sector (in years)** *(as per NCVET guidelines)*	Degree in the relevant discipline with minimum 5 years of experience in relative sector or related education institute. OR Training Department from Tool Room/ Technology Centre of MSME or any reputed industry.
4.	**Assessment Mode***(Specify the assessment mode)*	Blended Type (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,** https://www.dcmsme.gov.in/tcsp/Program%20Overview/Firozabad_V1.pdf https://www.upsdm.gov.in/Content/WebAssets/DSDP/FIROZABAD.pdf https://skillsip.nsdcindia.org/sites/default/files/kps-document/up-sg-report.pdf
2.	**Latest Market Research Reports or any other source (not older than 2years) (Yes/No):**Yes, https://aigmf.com/docs/glassWorldwide/2023/AIGMF%20GW108%2042,44,45,46.pdf
3.	**Government /Industry initiatives/ requirement (Yes/No):**Yes
4.	**Number of Industry validation provided:** 30
5.	**Estimated nos. of persons to be trained and employed: Approx. 50 per Year**
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)*	*Annexure-I*
2.	**Annexure:** List of tools and equipment relevant for qualification *(Mandatory, except in case of online course)*	*Annexure-II*
3.	**Annexure:** Industry Validations Summary	*Annexure-III*
4.	**Annexure:** Training & Employment Details	*Annexure-IV*
5.	**Annexure:** Blended Learning *(Mandatory, in case selected Mode of delivery is "Blended Learning")*	*Annexure-V*
6.	**Annexure:** Detailed Assessment Criteria *(Mandatory)*	*Annexure-VI*
7.	**Annexure:** Assessment Strategy *(Mandatory)*	*Annexure-VII*
8.	**Annexure:** Acronym and Glossary *(Optional)*	*Annexure- VIII*
9.	**Annexure:** Multiple Entry-Exit Details *(Mandatory, in case qualification has multiple Entry-Exit)*	*NA*
10.	**Supporting Document:** Model Curriculum *(Mandatory – Public view)*	*Annexure- IX*
11.	**Supporting Document:** Career Progression *(Mandatory - Public view)*	*This aspect mentioned in point no. 15*
12.	**Supporting Document:** Occupational Map *(Mandatory)*	*Annexure-X*
13.	**Supporting Document:** Assessment SOP *(Mandatory)*	*Annexure- XI*

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

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	Describe general glass furnace operation & maintenance. Describe elements of servicing of various products. Describe manufacturing procedure for glass product. Describe Service / Maintenance Processes and process plan.	As job holder (Furnace Technician) is dealing with various glass furnaces. He has to describe various process involving standard guidelines and procedures for doing the work. Job Holder (Furnace Technician) shall use various methods for completing the task in stipulated time by using various catalogues and manuals supplied with the product. He should understand various furnace operation and furnace related to product and desired mechanism. Through Cognitive knowledge job holder (Furnace Technician) shall judge the best conceptual procedure to work in complicated system sand logical system diagrams related to product	4
Professional and Technical Skills/ Expertise/ Professional Knowledge	Identify customer's requirement and create standard worksheet as per product. ☐Develop plan for daily, weekly and monthly furnace maintenance chart. ☐Demonstrate and understand various	Job holder (Furnace Technician) shall carry out the regular process activity in glass furnace. Manufacturing of various glass products. Able identify and correct the cause of problems in the glass furnace ,use of work clamping & product holding device for product , cognitive & practical skill	4

	service / maintenance techniques of mechanisms on various product. ☐Develop creative solution to the predictable and unpredictable problems in product ☐Develop mathematical/Analytical skills ☐Develop quality consciousness concept ☐Troubleshoot the problems in glass product.	required to accomplished tasks and solve problem & selecting basic method, principles, tools, material and information of standard practice for glass product manufacturing. Understand judge the product and create a report of problems and errors. Identifying the basic problems/errors and resolving through related system solutions.	
Employment Readiness & Entrepreneurship Skills & Mind-set/Professional Skill	Cognitive and practical skills required to generate solutions to specific problems in a field of work or study	Learner can Develop communication competence, report writing skills & preparation of Resumes or Curriculum Vitae, Learner can be able to Interact effectively with co-workers and can apply the Engineering Ethics and Human Values at workplace. Leaner can understand the basic process of becoming an entrepreneur &start up and can get benefits from various government schemes applicable.	4
Broad Learning Outcomes/Core Skill	☐Use basic & advance knowledge of the product and safety practices at the workplace ☐Work on service of the product ☐Develop entrepreneurship skills ☐Communicate effectively	Job holder (Furnace Technician) shall work on glass furnace where he/she shall gather accurate information on manufacturing of glass product. and requirements, Confirm the problems, preparation of furnace operating plan, selection of assembly process based on criticality and fitment, communicate clearly about the failure to the group members through written /verbal/email etc. as per organizational standard, identify different solution options which will	4

		meet requirements and design specification, ,Analyze system concepts to meet design requirements, identify problems with work planning, procedures, output and behavior and their implications e.g. Unpredictable behavior of furnace, different automatic systems and standard parts de graded performance, prioritize and plan for problem solving, communicate problems appropriately to others. Identify sources of information and support for problem solving, seek assistance and support from other sources to solve problems, Identify effective resolution techniques e.g. user manuals, maintenance manual, do and don'ts of systems etc., select and apply resolution techniques, seek evidence for problem resolution, inspect quality of own or other's work, analyze, information according to enterprise and work requirements, use diagnostic skills to identify and determine causes of faults, including interpretation of in-built fault indicators and error codes, take decisions within if within own jurisdiction or take approval for case outside own jurisdiction, Prepare cost estimate of the project, Prepare design &development project plan with timeline and responsibilities of self and team members, Carry out mathematical calculation required for various input specifications e.g. economy factor calculation, different forces calculation, tool element size design calculations, no. of cavities	

		calculation etc., carryout mathematical calculation for selection of optimum solutions.	
Responsibility	☐Work independently and work as a team members with full responsibility of output of group and development.	Job holder is required to carry out functions such as furnace operating, furnace pressure, furnace draught etc. In these activities job holder is doing the tasks independently without any supervision and he is responsible for his own learning and others at the task. Job holder shall encourage team members for continues learning and development by time to time discussing with them various issues of project like glass furnace operation, new development in furnaces, selection of material, new development in the materials and manufacturing processes. Job holder shall follow work standard, specific norms and procedures laid down by the organization.	4

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

List of Tools and Equipment for Batch Size: 10

S. No.	Tool / Equipment Name	Specification	Quantity for specified Batch size
1	Physical Balance	Industry Standard	3
2	Sieve Analyzer		1
3	Density Testing		1
4	Refractive Index measurement		01
5	Annealing Measurement		1
6	Thermal Shock Testing M/c		01
7	Electric Muffle Furnace (1000°C)		1
8	Radiation Pyrometer		3

Classroom Aids

The aids required to conduct sessions in the classroom are:

1. White Board with marker pen
2. Practice Exercise
3. Projector etc.

Annexure III: 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	Okay Glass	Nitin Agrawal	Owner	Makkhanpur Firozabad			
2	Pooja Glass	Nitin	Owner	Raja ka Taal Firozabad			
3	Pankaj Glass	Sonu Gupta	Owner	Raja ka Taal Firozabad			
4	Alok Glass	Mohit Agrawal	Owner	Raja ka Taal Firozabad			
5	Jayana Glass	Tony Bansal	Owner	Meera Chauraha Firozabad			
6	Nannumal Glass	Sagar Mittal	Owner	Dolpura Road Firozabad			
7	Anand Glass	Raju Jain	Owner	Raja ka Taal Firozabad			
8	Farukhi Glass	-	Owner	Meera Chauraha Firozabad			
9	Hind Glass	Nitin	Owner	Raja ka Taal Firozabad			
10	Industrial Building (IB) Glass	Ankit	Owner	Industry Area Nagla Bhau Firozabad			
11	Geeta Glass	-	Owner	Industry Area Nagla Bhau Firozabad			
12	Firozabad Ceramic Glass	Tony Bansal	Owner	Industry Area Nagla Bhau Firozabad			
13	Sun Glass 1st	Subham Gupta	Owner	Makkhanpur Firozabad			
14	Sun Glass 2nd	Subham Gupta	Owner	Makkhanpur Firozabad			
15	Sitaram Glass	-	Owner	Meera ChaurahaFirozabad			
16	Meera Glass	Prakash Mittal	Owner	Meera Chauraha Firozabad			
17	G. M. Glass	-	Owner	Raja ka Taal Firozabad			
18	Mittal Ceramic Glass	-	Owner	Industry Area Nagla Bhau			
19	Durgesh Glass	Mukesh	Owner	Meera Chauraha Firozabad			
20	S. R. Glass	Pranjal	Owner	Ashfabad Firozabad			
21	Tiger Glass	-	Owner	Dolpura Road Firozabad			
22	Jupitor Glass	Sagar Mittal	Owner	Raja ka Taal Firozabad			
23	Genral Traders (GT) Glass	-	Owner	Industry Area Nagla Bhau			
24	Om Glass	Goldi Babu	Owner	Raja ka Taal			

Annexure IV: 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
24-25	50	50	10	10	-	-
25-26	100	100	20	20	-	-
26-27	100	100	20	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

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:

- Fee based Training Program under the Ministry of MSME.
- ESDP Scheme under the Ministry of MSME.
- Capacity building Training program under National SC/ST Hub, M/o MSME, GOI

Content availability for previous versions of qualifications:

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

Languages in which Content are available:

English and Hindi

Annexure V: 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/wp-content/uploads/2023/01/Guidelines-for-Blended-Learning-for-Vocational-Education-Training-Skilling.pdf*

S. No.	Select the Components of the Qualification	List Recommended Tools – for all Selected Components	Offline : Online Ratio
1	☐Theory/ Lectures - Imparting theoretical and conceptual knowledge	Books/ e-books, Presentations, Reference Material , Self-Learning Videos /Broadcasts / Created Digital content	80:20
2	☐Imparting Soft Skills, Life Skills, and Employability Skills /Mentorship to Learners	Self-Learning Videos , Broadcasts, Mobile Learning ,Curetted Digital content	70:30
3	☐Showing Practical Demonstrations to the learners	Furnace operation ,Furnace repairing, Glass melting ,Glass batching, Process of glass industry, Shaping of glass ware, Glass industry etc.	100:00
4	☐Imparting Practical Hands-on Skills/ Lab Work/ workshop/ shop floor training	Testing of glass batch, Defect analysis of glass product, Complete analysis of glass ware, Physical and Chemical testing of glass product.	100:00

5	☐Tutorials/ Assignments/ Practice	Lecture test, Mobile Quick test app, MCQ based tests, Practical Test based on glass field.	100:00
6	☐Proctored Monitoring/ Assessment/ Evaluation/ Examinations	Assessment engine for Essays, Up-loadable file examinations, Mock test sessions	100:00

Annexure VI: 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
NOS / Module: **MSME/AV/**1 Basic Science and Math	PC.1 Able to understand importance of fundamental science PC.2 Purpose of learning physics, Applications in daily life PC.3 Able to understand types of unit and its importance PC.4 Able to understand distinction between rotary and circular motion, velocity, time and distance graph PC.5 Able to understand centripetal and centrifugal forces, banking of roads and bending of cyclist PC.6 Able to understand examples of periodic motion necessary conditions for the appearance and pursuance of periodic motion PC.7 Able to understand wave equation PC.8 Able to understand what is gravity PC.9 Newton's principle PC.10 Principle and technique of launching of artificial satellite, natural and man-made satellite PC.11 Able to understand what is matter, its classifications and properties PC.12 Kinetic theory of matter relation of internal energy with quantity of heat and temperature. PC.13 Able to understand kinetic interpretation of temperature, absolute zero, Gaslaw's, Conceptof kinetic theory. PC.14 Able to understand the effect of temperature on ST of liquids and gases. PC.15 Experimental determination of ST of liquid by capillary rise PC.16 Able to understand by experimental determination by Posethic's method, PC.17 Dependence of viscosity of liquids on temperature, application PC.18 Able to understand first law of thermodynamics PC.19 Mechanical equivalent of heat, PC.20 Concept of latent heat of fusion of ice & vaporization of water	100	100	-	-

	PC.21 Able to understand natural and forced convection PC.22 Ventilation of buildings PC.23 Radiation, Goodand bad radiations, Absorbers PC.24 Provost's theory, Stefan-Boltzmann law PC.25 Able to understand importance of fundamental chemistryRadioactivity, Alfa gamma & beta rays PC.26 Able to understand effect of temperature catalysis. PC.27 Able to understand Le- chatelierprincipleEffect of temperature, pressure & concentration in NH3 PC.28 Able to understand classification on basis of, p, d, f modelActinide and lanthanide series. PC.29 Able to understand Redox ReactionsCalculation of chemical equivalents on its basis. PC.30 Able to understand electroplating of Cu and Ni. PC.31 Able to understand their sheet diagram for manufacture of sodium bicarbonates and ammonia PC.32 Able to understand composition& uses of steel, brass, bronze and duralumin alloy. Able to understand modification of environment.				
NOS / Module: **MSME/AV/02** Glass Raw Materials & Batch Preparation	**PC.1.** To get acquainted with the symbols, names, Batch Preparation terms and practices in glass manufacturing **PC.2.** Competence in selection and use of the raw materials in glass manufacturing **PC.3.** Competence in beneficiation of raw materials and its storage **PC.4.** Competence in batch preparation**.** **PC.5.** Raw Materials Commercial and Scientific names of Raw materials of glass such as Silica/ Quartz Sand, Feldspar, Calcite/Limestone, Borax, Dolomite, Potassium Nitrate, Sodium Nitrate, Sodium Carbonate, Sodium Sulphate etc. **PC.6.** Physical and mechanical properties of Raw materials	100	1OO	-	-
NOS / Module: **MSME/AV/03** Glass Manufacturing Process	PC.1 Understand raw materials and their use in industry PC.2 Type of material-primary and additional PC.3 Safety application, safety rules, precaution of accidents PC.4 Safety precaution and safety rule PC.5 To get acquainted with scientific names and symbols involved in glass manufacturing PC.6 To understand scientific principles involved in glass manufacturing PC.7 To make use of scientific facts to improve efficiency of the manufacturing process PC.8 Unable to understand glass raw batch preparation PC.9 Unable to uderstand glass raw materials and their scitfin	100	100		

NOS / **Module:** **MSME/AV/04** Glass forming Techniques	PC.10 Understand raw materials and their use in industry PC.11 Type of material-primary and additional PC.12 Safety application, safety rules, precaution of accidents PC.13 Safety precaution and safety rule PC.14 To get acquainted with scientific names and symbols involved in glass manufacturing PC.15 To understand scientific principles involved in glass manufacturing PC.16 To make use of scientific facts to improve efficiency of the manufacturing process	100	100		
NOS / **Module:** **MSME/AV/05** Entrepreneurship Development / Quality Management System	PC.1 Qualities and functions of entrepreneur and barriers in entrepreneurship. PC.2 Sole proprietorship and partnership forms and other forms of business organizations. PC.3 Schemes of assistance by entrepreneurial support agencies at National, State, District –level, organisation: NSIC, NRDC, DC, MSME, SIDBI, NABARD, NIESBUD, HARDICON Ltd., Commercial Banks, SFC's TCO, KVIB, DIC, Technology Business. PC.4 Market Survey and Opportunity Identification/Ideation Scanning of the business environment. PC.5 Salient features of National and Haryana State industrial policies and resultant business opportunities PC.6 Types and conduct of market survey PC.7 Assessment of demand and supply in potential areas of growth PC.8 Identifying business opportunity PC.9 Considerations in product selection. PC.10 Converting an idea into a business opportunity.	100			100
NOS / **Module:** **MSME/AV/06** Introduction to Operation of Glass plant machinery / Equipments	PC.1 Acquaintance with different processes adopted in glass manufacturing process PC.2 Knowledge of plants and machinery required for glass manufacturing. PC.3 Knowledge about operation of above machineries/ equipments PC.4 Importance of above machineries. PC.5 Cullet yard , Batch House ,Furnace Shop , Working End Cold End PC.6 Cullet crusher, Cullet Washing Machine, Conveyor Belt, Silo.	100	100		
NOS / **Module:** **MSME/AV/07** Furnace Operation	PC.1 Knowledge about different types of glass melting furnaces PC.2 .Knowledge about auxiliary furnaces used in glass manufacturing PC.3 Knowledge about operation of above machineries/ equipments PC.4 Knowledge about different types of fuel used in glass manufacturing PC.5 Knowledge about combustion process and its control PC.6 Awareness conservation towards	100	100		

	PC. 7 Safety and precautions.				
NOS / Module: **MSME/AV/08** Automatic Process of Glass Manufacturing(Control System)	PC.1 Knowledge of control parameters necessary for automatic processes PC.2 Knowledge about control equipments. PC.3 Competence in monitoring of control equipments PC.4 Competence in maintaining and understanding Log Book of operations PC.5. Knowledge about steps in case of interruptions PC.6 Control parameters of automatic processes PC. 7 Deviations in control Remedial action PC.8 Advantages & Limitations of Automatic processes .	100	100		
NOS / 9Module: **MSME/AV/09** Project Work	PC.1 Skill Development			100	
NOS / Module: **MSME/AV/10** **Employability Skill**	PC.1 The importance of Employability Skills for the current job market and future of work PC.2 List different learning and employability related GOI and private portals and their usage PC.3 Research and prepare a note on different industries, trends, required skills and the available opportunities PC.4 Constitutional values, including civic rights and duties, citizenship, responsibility towards society etc. PC.5 PC.5 Skills required for employment.(i.e. Self-Awareness, Behaviour Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn)	100			
	Total Marks	**900**	**700**	**100**	**100**

Annexure VII: 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 are assigned to the Central MSME NSQF Examination Cell via email for the assessment.
- Central MSME NSQF Examination Cell sends the assessment confirmation to respective TC/AB
- Central MSME NSQF Examination Cell deploys the certified Assessor for executing the assessment at respective TC/AB via online / offline mode.
- Central MSME NSQF Examination Cell & respective TC/AB Internal Examination Cell monitors the assessment process & records

2. Testing Environment:

- Central MSME NSQF Examination Cell confirms the Assessment location, date and time
- For number of candidates more than 30 separate assessors are assigned for the assessment.
- Central MSME NSQF Examination Cell & respective assessor confirms that the allotted time to the candidates to complete Theory & Practical Assessment is correct.

3. Assessment Quality Assurance levels/Framework:

- Each TC Submits the Question Bank for the individual subject Theory & Practice separately, submits to Central MSME NSQF Examination Cell and it is verified by the Central MSME NSQF Examination Cell Committee members.
- Questions are mapped to the specified assessment criteria
- All the assessors & Trainers are wel qualified &trained to carry out the specified task.

4. Types of evidence or evidence-gathering protocol:

- Online Link is send by Central MSME NSQF Examination Cell to respective TC & Assessor. Reporting of the assessor from assessment location is verified by the Central MSME NSQF Examination Cell through the online Meeting Link. Students are also required to join for the online link for verification by the Central MSME NSQF Examination Cell
- Assessment Photographs are shared with the Central MSME NSQF Examination Cell & are also with the respective TC.

5. Method of verification or validation:

- Online Link is send by Central MSME NSQF Examination Cell to respective TC & Assessor. Reporting of the assessor from assessment location is verified by the Central MSME NSQF Examination Cell through the online Meeting Link. Students are also required to join for the online link for verification by the Central MSME NSQF Examination Cell

6. Method for assessment documentation, archiving, and access:

- The Assessment records are shared with Central MSME NSQF Examination Cell & also stored at respective TC.

- Assessor fills the assessment report and shares with the Central MSME NSQF Examination Cell

On the Job Training:

- The module / NOS (which covers the job profile of CNC Operator- Turning will be assessed.
- The candidate must score 60% marks to successfully complete the OJT.
- Learner will be assessed on the basis of OJT report followed by Viva
- Assessment will ensure that the Learner is able to:
    - ✓ Effective engagement with the customers / Subordinates and team
    - ✓ Understand the working of various tools and equipment
    - ✓ Understand the working environment of the industry

Annexure VIII: 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.
Short Term Training (STT)	STT/ Short -term skilling means any vocational training program undertaken for less than a year (Theory + Practical + OJT). https://ncvet.gov.in/sites/default/files/NCVET.pdf