



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

MSME TECHNOLOGY CENTRE



Skill India
कौशल भारत - कुशल भारत

QUALIFICATION FILE

JR. TECHNICIAN - Heat Treatment

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

Up skilling Dual/Flexi Qualification For ToT For ToA

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

NCrF/NSQF Level: 3.5

Submitted By:

MSME TECHNOLOGY CENTRE

O/o DC MSME, Ministry of Micro, Small and Medium Enterprises

Govt. of India

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Section 1: Basic Details

1.	Qualification Name	JR. TECHNICIAN - Heat Treatment														
2.	Sector/s	Capital Goods & Manufacturing														
3.	Type of Qualification: <input checked="" type="checkbox"/> New <input type="checkbox"/> Revised <input type="checkbox"/> Has Electives/Options <input type="checkbox"/> OEM	NQR Code & version of existing/previous qualification: (change to previous, once approved) QG-3.5-CG-02401-2024-V1-MSME	Qualification Name of existing/previous version: Certificate Course in Heat Treatment (CCHT)													
4.	a. OEM Name b. Qualification Name (Wherever applicable)	-														
5.	National Qualification Register (NQR) Code & Version (Will be issued after NSQC approval)	QG-3.5-CG-02401-2024-V1-MSME	6. NCrF/NSQF Level: 3.5													
7.	Award (Certificate/Diploma/Advance Diploma/Any Other) (Wherever applicable specify multiple entry/exits also & provide details in annexure)	Certificate														
8.	Brief Description of the Qualification	This qualification helps learner in the following: <ul style="list-style-type: none"> • Load and Unload the Material in the Furnace. • Part Preparation for Heat Treatment • Measure the Hardness after Heat Treatment • Understand various Heat Treatment Operations 														
9.	Eligibility Criteria for Entry for Student/Trainee/Learner/ Employee	a. Entry Qualification & Relevant Experience: 10th Grade pass <table border="1" data-bbox="909 1046 2103 1316"> <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 pass or equivalent</td> <td>No Experience required.</td> </tr> <tr> <td>2</td> <td>Previous relevant Qualification of NSQF Level 3 in metal Working/ Machine Tool area</td> <td>1.5 year relevant experience</td> </tr> <tr> <td>3</td> <td>Previous relevant Qualification of NSQF Level 2.5 in metal Working/ Machine Tool area</td> <td>3 year relevant experience</td> </tr> </tbody> </table> b. Age: 15 Years			S. No.	Academic/Skill Qualification (with Specialization - if applicable)	Required Experience (with Specialization - if applicable)	1	Grade 10 pass or equivalent	No Experience required.	2	Previous relevant Qualification of NSQF Level 3 in metal Working/ Machine Tool area	1.5 year relevant experience	3	Previous relevant Qualification of NSQF Level 2.5 in metal Working/ Machine Tool area	3 year relevant experience
S. No.	Academic/Skill Qualification (with Specialization - if applicable)	Required Experience (with Specialization - if applicable)														
1	Grade 10 pass or equivalent	No Experience required.														
2	Previous relevant Qualification of NSQF Level 3 in metal Working/ Machine Tool area	1.5 year relevant experience														
3	Previous relevant Qualification of NSQF Level 2.5 in metal Working/ Machine Tool area	3 year relevant experience														
10.	Credits Assigned to this Qualification, Subject to	40	11. Common Cost Norm													

	Assessment (as per National Credit Framework (NCrF))		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)	<input type="checkbox"/> Offline <input type="checkbox"/> Online <input checked="" type="checkbox"/> 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>132</td> <td>510</td> <td>360</td> <td>-</td> <td>1002</td> </tr> <tr> <td>Online</td> <td>198</td> <td>-</td> <td>-</td> <td></td> <td>198</td> </tr> <tr> <td>Total</td> <td>330</td> <td>510</td> <td>360</td> <td></td> <td>1200</td> </tr> </tbody> </table>	Training Delivery Modes	Theory (Hours)	Practical (Hours)	OJT Mandatory (Hours)	OJT Recommended (Hours)	Total (Hours)	Classroom (offline)	132	510	360	-	1002	Online	198	-	-		198	Total	330	510	360		1200			
Training Delivery Modes	Theory (Hours)	Practical (Hours)	OJT Mandatory (Hours)	OJT Recommended (Hours)	Total (Hours)																								
Classroom (offline)	132	510	360	-	1002																								
Online	198	-	-		198																								
Total	330	510	360		1200																								
		(Refer Blended Learning Annexure for details)																											
14.	Aligned to NCO/ISCO Code/s (if no code is available mention the same)	8121.4801 / Heat Treatment Operator																											
15.	Progression path after attaining the qualification (Please show Professional and Academic progression)	Professional/Career Progress: TECHNICIAN - Heat Treatment																											
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	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No URLs of similar Qualifications:																											
18.	Is the Job Role Amenable to Persons with Disability	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If "Yes", specify applicable type of Disability: As per Govt. Norms.																											
19.	How Participation of Women will be Encouraged	Seats are reserved as per government Norms.																											
20.	Are Greening/ Environment Sustainability Aspects Covered (Specify the NOS/Module which covers it)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No The said aspect is covered in the module Name Employability Skills																											
21.	Is Qualification Suitable to be Offered in Schools/Colleges	Schools <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Colleges <input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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: Sh. Vijay Mahipatrao Bankar Contact No. +0755 3501078 Email-msmetcab@gmail.com																											

23. Final Approval Date by NSQC:30..402.24	24. Validity Duration: 3years	25. Next Review Date:30.04.2027
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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: 01

S. No	NOS/Module Name	NOS/ Module Code & Version <i>(if applicable)</i>	Core/ Non-Core	NCrF/NSQ F Level	Credits as per NCrF	Training Duration (Hours)					Assessment Marks					
						Th.	Pr.	OJT-Man.	OJT-Rec.	Total	Th.	Pr.	Proj.	Viva	Total	Weightage (%) <i>(if applicable)</i>
1	Read and Construct the Orthographic Projection of part	MSME/CCMTHT/01 & Version 1.0	Core	3.5	2	30	30	-	-	60	-	100	-	-	100	
2	Use and Application of Engineering Materials	MSME/CCMTHT/02 & Version 1.0	Core	3.5	2	60	-	-	-	60	100	-	-	-	100	
3	Performs Material testing Activities	MSME/CCMTHT/03 & Version 1.0	Core	3.5	3	30	60	-	-	90	100	100	-	-	200	
4	Assist in Heat Treatment Processes	MSME/CCMTHT/04 & Version 1.0	Core	3.5	13	90	300	-	-	390	100	100	-	-	200	
Duration (in Hours) / Total Credit / Marks					20	210	390	-	-	600	300	300	-	-	600	

Semester: 02

S. No	NOS/Module Name	NOS/ Module Code & Version <i>(if applicable)</i>	Core/ Non-Core	NCrF/NSQ F Level	Credits as per NCrF	Training Duration (Hours)					Assessment Marks					
						Th.	Pr.	OJT-Man.	OJT-Rec.	Total	Th.	Pr.	Proj.	Viva	Total	Weightage (%) <i>(if applicable)</i>
1	Employability Skills	MSME/ES/03	Non-Core	3.5	4	120	-	-	-	120	100	-	-	-	100	
2	Assist & Perform Heat Treatment operation for Metals	MSME/CCMTHT/05 & Version 1.0	Core	3.5	16	-	120	360	-	480	-	100	-	100	200	

Duration (in Hours) / Total Credit / Marks	20	120	120	360	-	600	100	100	-	100	300
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Elective NOS/s:

S. No	NOS/Module Name	NOS/ Module Code & Version (if applicable)	Core/ Non-Core	NCrF/NS QF 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/NS QF 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:

Specify any 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) <i>(as per NCVET guidelines)</i>	Diploma/ Degree in Mechanical Engineering or Equivalent with Practical skills and knowledge required in the relevant job role at least one level higher i.e level 4.0 and above in related field and minimum 2 years of experience in Tool Room/ Technology Centre of MSME or any reputed industry will become a trainer, Or in accordance with the TOT guideline of NCVET.
2.	Master Trainer's Qualification and experience in the relevant sector (in years) <i>(as per NCVET guidelines)</i>	Degree in Engineering (Mechanical/ Production/ Manufacturing Technology) or equivalent with 3 to 5 years of experience in Production/ Training/ Design Department from Tool Room/ Technology Centre of MSME or any reputed industry will become as a Master Trainer, Or in accordance with the TOT guideline of NCVET
3.	Tools and Equipment Required for Training	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>(If "Yes", details to be provided in Annexure)</i>
4.	In Case of Revised Qualification, Details of Any Up skilling Required for Trainer	Yes

Section 4: Assessment Related

1	Assessor's Qualification and experience in relevant sector (in years) <i>(as per NCVET guidelines)</i>	Diploma / Degree in Engineering (Mechanical/ Production/ Manufacturing Technology) or equivalent with 3 years of experience in Production/ Training/ Heat Treatment Department from Tool Room/ Technology Centre of MSME or any reputed industry. Only (TOA) certified assessors will be able to conduct the assessments.
2	Proctor's Qualification and experience in relevant sector (in years) <i>(as per NCVET guidelines)</i>	Degree in Engineering (Mechanical/ Production/ Manufacturing Technology) or equivalent With 5 years of experience in Production/ Training/ Heat Treatment 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) <i>(as per NCVET guidelines)</i>	Post Graduate in the relevant discipline with minimum 5 years of experience in Production/ Training/ Heat Treatment Department from Tool Room/ Technology Centre of MSME or any reputed industry.
4	Assessment Mode <i>(Specify the assessment mode)</i>	Blended Type (Online + Offline)

5	Tools and Equipment Required for Assessment	<input checked="" type="checkbox"/> Same as for training <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>(details to be provided in Annexure-if it is different for Assessment)</i>
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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): Yes, India Skills Report 2023, “ Roadmap to India’s Skills and talent Economy 2030”
2.	Latest Market Research Reports or any other source (not older than 2years) (Yes/No): Yes, “Engineering and capital goods industry” (Feb-2023) by India Brand Equity Foundation –IBEF
3.	Government /Industry initiatives/ requirement (Yes/No): Yes
4.	Number of Industry validation provided: 45
5.	Estimated nos. of persons to be trained and employed: Approx. 100 per Year
6.	Evidence of Concurrence/Consultation with Line Ministry/State Departments: NA If “No”, why:

Section 6: Annexure & Supporting Documents Check List

Specify Annexure Name / Supporting document file name

1.	Annexure: NCrF/NSQF level justification based on NCrF level/NSQF descriptors <i>(Mandatory)</i>	Annexure-I
2.	Annexure: List of tools and equipment relevant for qualification <i>(Mandatory, except in case of online course)</i>	Annexure-II
3.	Annexure: Industry Validations Summary	Annexure-III
4.	Annexure: Training & Employment Details	Annexure-IV
5.	Annexure: Blended Learning <i>(Mandatory, in case selected Mode of delivery is “Blended Learning”)</i>	Annexure-V

6.	Annexure: Detailed Assessment Criteria (<i>Mandatory</i>)	<i>Annexure-VI</i>
7.	Annexure: Assessment Strategy (<i>Mandatory</i>)	<i>Annexure-VII</i>
8.	Annexure: Acronym and Glossary (<i>Optional</i>)	<i>Annexure- VIII</i>
9.	Annexure: Multiple Entry-Exit Details (<i>Mandatory, in case qualification has multiple Entry-Exit</i>)	<i>NA</i>
10.	Supporting Document: Model Curriculum (<i>Mandatory – Public view</i>)	<i>Annexure- IX</i>
11.	Supporting Document: Career Progression (<i>Mandatory - Public view</i>)	<i>This aspect mentioned in point no. 15</i>
12.	Supporting Document: Occupational Map (<i>Mandatory</i>)	<i>Annexure-X</i>
13.	Supporting Document: Assessment SOP (<i>Mandatory</i>)	<i>Annexure- XI</i>
14.	Any other document you wish to submit:	<i>NA</i>

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	<ul style="list-style-type: none"> • Demonstrate the use of Engineering Drawing • Describe concept and properties of engineering metals. • Describe concept and material testing Methods. • Describe and demonstrate heat treatment of plain and low carbon steel. • Describe and demonstrate heat treatment of alloy steel. • Work in familiar, predictable, routine, situation of clear choice. 	<p>Material Testing Technician / Heat Treatment operator applies his knowledge of Mechanical Properties of materials, Testing and different heat treatment processes to treat the metals and change their properties. The basic flow of work is routine and repetitive but challenging some materials can also be there for which he need to think and improvise.</p> <p>Job role requires well developed skills and knowledge about material testing methods & all the heat treatment processes on various types of metals and practical as well as theoretical aspects of material properties and their behavior change with temperature variations.</p>	Level- 3.5
Professional and Technical Skills/ Expertise/ Professional Knowledge	<p>Factual knowledge of field of knowledge or study.</p> <ul style="list-style-type: none"> •Describe and explain about crystals and its formation. •Distinguish between ferrous and non-ferrous metals. •Identify ferrous and non-ferrous metals. •Describe about Iron and steel and its various industrial applications. •Describe the mechanical properties of ferrous and non-ferrous metals. •Describe and demonstrate material testing methods. 	<p>Material testing Technician should have theoretical as well as practical knowledge of different material testing methods like operating mechanical testing equipment and chemical composition testing.</p> <p>Heat Treatment operator should have theoretical as well as practical knowledge of all Heat Treatment operations like case hardening; stress relieving, hardening & tempering of various grades of steel. Principle and concept of molding operations material properties and their effect on heat variations.</p> <p>The Heat Treatment operator should have factual knowledge about Heat treatment operations.</p>	Level- 3.5

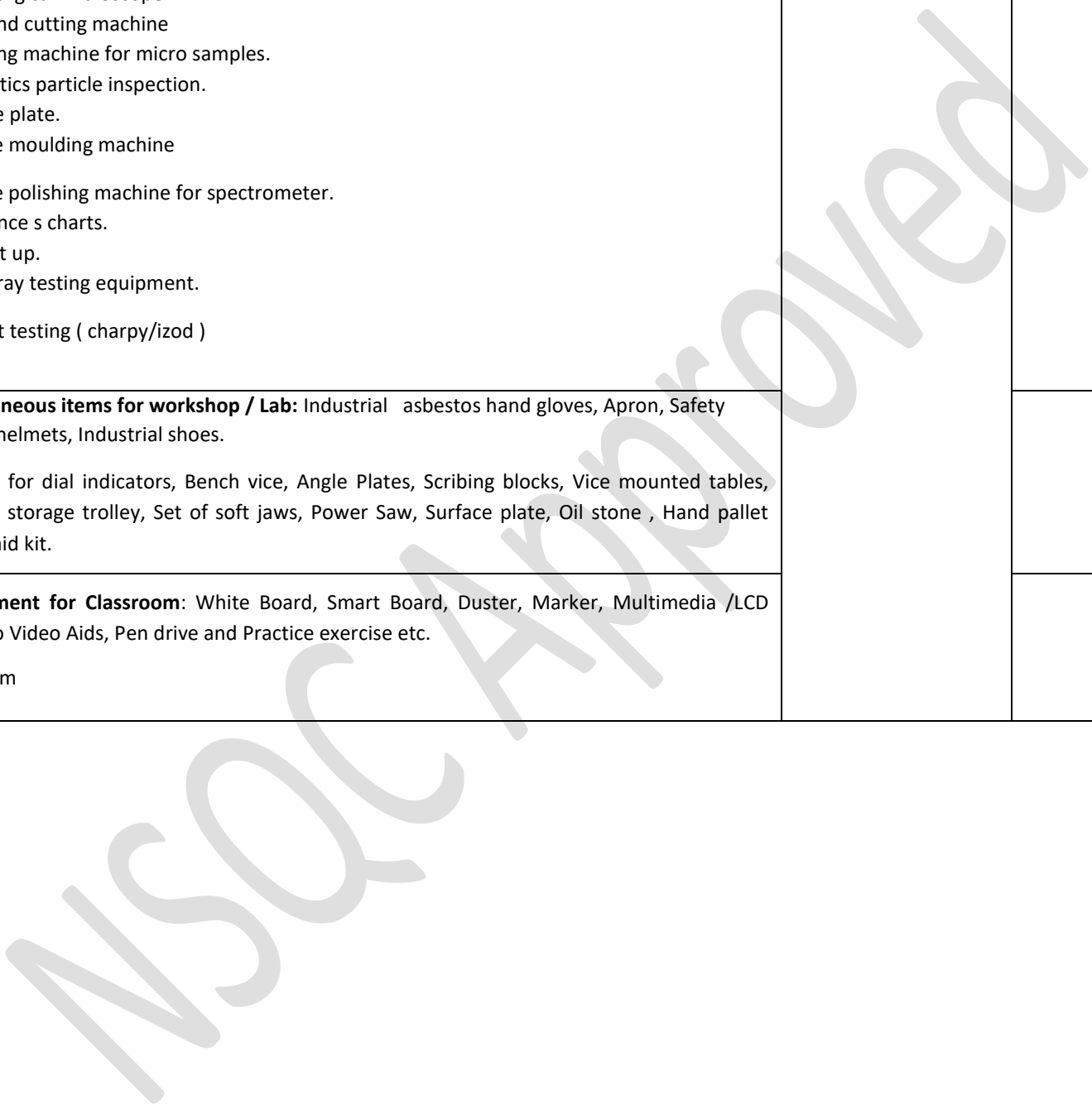
<p>Employment Readiness & Entrepreneurship Skills & Mind-set/Professional Skill</p>	<p>Understand Personal Strengths \ Value, Digital Literacy, Money Matters and Preparing for Employment & Self Employment</p>	<p>Learner can Develop communication competence, report writing skills & preparation of Resumes or Curriculum Vitae, Learner can be able to Interact effectively with co-workers and can apply the Engineering Ethics and Human Values at workplace.</p> <p>Learner can understand the basic process of becoming an entrepreneur & start up and can get benefits from various government schemes applicable.</p>	<p>Level- 3.5</p>
<p>Broad Learning Outcomes/Core Skill</p>	<p>Identify elements of communication cycle and provide feedback, Differentiate between Sender, Message, Medium, Receiver and Feedback. Describe the importance of active listening, meaning of feedback and importance of feedback.</p> <p>Overcome barriers in Communication and Apply principles of communication.</p>	<p>Material testing Technician / Heat Treatment operator should know language to communicate written or oral, with required clarity to his superior or subordinates. The communication is very important in heat treatment process, because any gap in communication can lead to ineffective material property changes.</p>	<p>Level- 3.5</p>
<p>Responsibility</p>	<p>Describe and demonstrate material testing methods of different engineering metals used in industries.</p> <p>Describe and demonstrate heat treatment of plain and low carbon steel.</p> <p>Describe and demonstrate heat treatment of alloy steel.</p> <p>Demonstrate various heat treatment operations like carburizing, annealing etc.</p> <p>Responsible for own work and learning as well as for the subordinates & Takes complete responsibility for delivery and quality of own work and output.</p>	<p>Material testing Technician is to ensure issuance of proper material as per requirement after conducting appropriate tests.</p> <p>Heat Treatment operator is working on different metals to change their properties as desired by using various heat treatment operations. In these activities Heat Treatment operator is doing the tasks independently without any supervision and he is responsible for his own learning at the task.</p>	<p>Level- 3.5</p>

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

List of Tools and Equipment for Batch Size: 20

S. No.	Tools / Equipment Name	Specification	Quantity for specified Batch size
1	Neural salt bath furnace	Industry Standard	01
2	Mar-quenching Furnace		01
3	Box Type Furnace		01
4	Pit Type Furnace		01
5	Box Type Furnace		01
6	Fulmena furnace		01
7	Gas carburizing Furnace		01
8	Plasma Nitriding Furnace		01
9	Vacuum Furnace		01
10	Measuring Instruments: Vernier Calliper, Micrometre: Dial Indicators (Lever type & Plunger type), Portable Harness Tester, Rockwell Hardness Tester, straightening machine.		01 Set
11	Testing lab Equipment's <ul style="list-style-type: none">• Spectrometer for material chemical composition checking• Universal testing machine.• Rockwell Hardness tester.• Portable hardness tester.• Handy Gun type spectrometer.• Microvicker's hardness tester.• Ultrasonic flaw detector.		

	<ul style="list-style-type: none"> • Metallurgical microscope • Diamond cutting machine • Polishing machine for micro samples. • Magnetics particle inspection. • Surface plate. • Sample moulding machine • Sample polishing machine for spectrometer. • Reference s charts. • DPT Set up. • Salt spray testing equipment. • Impact testing (charpy/izod) 		01 SET
12	<p>Others Miscellaneous items for workshop / Lab: Industrial asbestos hand gloves, Apron, Safety goggles, safety helmets, Industrial shoes.</p> <p>Magnetic stand for dial indicators, Bench vice, Angle Plates, Scribing blocks, Vice mounted tables, Scrap box, Tool storage trolley, Set of soft jaws, Power Saw, Surface plate, Oil stone , Hand pallet truck and First aid kit.</p>		20
			01
13	<p>General Equipment for Classroom: White Board, Smart Board, Duster, Marker, Multimedia /LCD Projector, Audio Video Aids, Pen drive and Practice exercise etc.</p> <p>Computer system</p>		01
			10



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	SURAJ TOOLS AND ENGINEERING WORKS	DEIM	CEO	MIDC CHIKATHANA AURANGABAD	7447375273	SURAJTOOLS@GMAIL.COM	
2	INDOTURAN INDUSTRIES	USHAL SHINDE	PROPRIETOR	MIDC AURANGABAD WALUJ	9595280808		
3	MIKRONIX GAUGES PVT LTD		MD	B-25 MIDC , CHIKALTHANA, CH. SAMBAHAJINAGAR	9822004674	MGPLAY@GMAIL.COM	
4	ALLWIN UNITED ASSOCIATION PVT.LTD	MI PANKAJ	DIRECTOR	ALLWIN UNITED ASSOCIATION PVT.LIMITED	7588537412	CONTACT@TECHNOCADDAPL.COM	
5	MIS ANNA BLOCK BORING CENTER	MASIT KHAN	PROPRIETOR	MIS ANNA BLOCK BORING CENTER	9767375083		
6	LAXMI ENTERPRISES	RANJANA BHAYYA SAHEB PAWAR	MI.MANAGER	SAINAGAR GHANEGAON MIDC WALUJ, AURANGABAD	7387431128		
7	M/S HR INDUSTRIES	VASPUT JAUGELE	PROPRIETOR	SAJAPUR, AURANGABAD	9637384737		
8	GAYATRI AUTO COMPONENTS, AURANGABAD	MR. RANJEET METE	MANAGER	AURANGABAD	7385613842	INFO@GAYATRIAUTO.IN	
9	SHARP TOOLS	MAHESH DORLE	SR.MANAGER		9689574563		
10	CHANCHAL ENGINEERING WORKS AURANGABAD	DRYHAEBHWAR	PROPRIETOR	AURANGABAD	9765499939	CHANCHALENGINEERINGWORKS@GMAIL.COM	
11	AKSHARA ENGINEERING WORKS	SHIVAJI GAIKWAD		WALUJ MIDC AURANGABAD	9096420857		
12	ARUSHI ENGINEERING AND BREEZING	VIJAYA PARADE	MANAGER	WALUJ MIDC AURANGABAD	9049596736		
13	SR INDUSTRIES AURANGABAD	RAJENDRA SAUDAGAR MARE	SR. MANAGER	AURANGABAD	8698145607		
14	DEVA ENGINEERING AURANGABAD	ASHOK MOTINAM VEOR	SR. MANAGER	AURANGABAD	8459567793		
15	MAULI PATTERN AURANGABAD	MR.PANCHAL	PROPRIETOR	AURANGABAD	9673067755		
16	NAVARATNA INDUSTRIES			WALUJ MIDC AURANGABAD			
17	PRANAW ENTERPRISES AURANGABAD	PANDRINATH DEVKAR	PROPRIETOR	AURANGABAD	9371671146	PRANAVENT@GMAIL.COM	

18	R.P INDUSTRIES	PRASHANT PATIL	CEO	MIDC CHIKATHANA AURANGABAD	8007222251	PRASHANTPATIL@GMAIL.COM	
19	TECHNO MOULD SOLUTION	MR.PANDA	PROPRIETOR	AURANGABAD	7774077907	TECHNOMOULD.SOLUTIONS@GMAIL.COM	
20	SANJAY THCHNO PRODUCTS	HEMANT CHAUDHURY	VP- MANUFACTURING	AURANGABAD	9158898090	HEMANT.CHAUDHARI@SANJAYTECHN OPRODUCTS.IN	
21	SPECIAL PRECISION	ASHIWINI TADHAV	PROPRIETOR	AURANGABAD		SPECIALASHIWIN@GMAIL.COM	
22	PARASON MACHINERY (INDIA) PVT LTD	GHAHU	GM	AURANGABAD	9325202860	AMOIL.MOGAL@PASASEN.COM	
23	PADMA INDUSTRIES	VITTHALKADOM	CEO	MIDC AURANGABAD	9421688212	VITTHALKADOM2525@GMAIL.COM	
24	VANI ENGINEERING CO.PVT LTD	SUBH	GENERAL MANAGER	AURANGABAD	9730729991	SKAPE@GMAIL.COM	
25	GLANCE ENGINEERING - 6 PVT.LIMITED CHIKALTHANA	SUBH SK	GENERAL MANAGER	CHIKALTHANA	9730729991	S.KALE@GMAIL.COM	
26	JAI BHAVANI ENGINEERING WORKS		GENERAL MANAGER		9370251815		
27	S N ENGINEERINGWORKS	SNEHA	CEO	CH SAMBHAJINAGAR	9822859974	SNEHAG858@GMAIL.COM	
28	R N INDUSTRIES	TLC	CEO	KAIAGRAM, AURANGABAD	9890718928	R.N.INDUSTRIES01@GMAIL.COM	
29	MADURA DIE CAST PVT LIMITD	MADHURA	CEO	SHENDRA AURANGABAD	9422204622	MADHRADIECAST@GMAIL.COM	
30	SWAGATI ENGINEERING WIS2		CEO	CHIKALTHANA,AURANGABAD	9763714369	SWAGATIENGG@GMAIL.COM	
31	IDEAL ENTERPRISE		GENERAL MANAGER	CHIKALTHANA AURANGABAD	9763785199	IDEAL1993@GMAIL.COM	
32	INDEXABLE CUTTING TOOL	TOR	PROPRIETOR	BAJAJNAGAR,AURANGABAD			
33	CREATIVE CASTING INDUSTRIES	MR. SANJAY RANDIRE	PARTNER	K-30, MIDC WALUJ , AURANGABAD	9011001671	CREATIVECAST@REDIFFMAIL.COM	
34	PYRAMID INDUSTRIES	MR. RAJENDRA KALE	PROPRIETOR				
35	RMG INDUSTRIES	RAOUAL	CEO	MIDC AURANGABAD WALUJ	9766699611	EAJUQANDA@RMGINDUSTRIES.COM	
36	M/s. R.T Industries	Sh. Sumit Dhand	Owner	10302, street no. 3, Bhagwan Chowk, Ludhiana	6280561651	sumit_dhand2007@yahoo.com	
37	M/s. Lakshmi Vacuum Heat Treaters Pvt. Ltd.	Sh. Naveen Kumar	Manager	No. 412-D, Sector-7, IMT Manesar, Gurugram.	9999104469	manesar@lakshmivacuum.com	
38	M/s. Sunny Agro Industries	Sh. Jatinder Pal Singh	Owner	C-3, Focal Point Moga	9872648033	Jps130977@gmail.com	
39	M/s. International	Sh. Amandeep	Manager	Village Pahruwal, Budhewal	9855222900	iepforge@gmail.com	

	Engineering Products	Attri		Road, Ludhiana			
40	M/s. ARK International	Sh. Arjun Tandon	Manger	C-168, 169 Phase-V Focal Point Ludhiana	7999997963	Arkinternational13@gmail.com	
41	M/s. Charu Auto Industries	Sh. Mintu	Manger	C-74, Phase-V, Focal Point, Ludhiana	9915090190		
42	M/s. Max. Agro India Industries	Sh. Ashish Gupta	Plant Head	Plot no. 34, vill. Kamopur, karnal	7056760736	maxagroindia@gmail.com	
43	HARYANA FASTNERS	SERARIT SINGH	PROPRIETER	166, Kailash Nagar, Sherpur, Near Cancer Hospital, LUDHIANA-141010	98140903	haryanafasteners@gmail.com	
44	VISHESH ELECTRO SYSTEM	AVOTAU SINGH	PROPRIETER	Kailash Nagar, Behind Cancer Hospital, Ludhiana-141010. (INDIA)	98145-00470	vishesh.system@gmail.com	
45	KALSI MACHINE TOOLS INDUSTRY	HARINDU MOHAN KALSHI	PROPRIETER	17611, Kailash Nagar, Sherpur Road, LUDHIANA	98888 96488	kimton.001@gmail.com	

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	30	30	3	5	-	-
25-26	60	60	6	6	-	-
26-27	100	100	10	10	-	-

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
1.0	20-21	3	3	3	3	-	-	-	-	-	-	-	-
1.0	21-22	3	3	3	3	-	-	-	-	-	-	-	-
1.0	22-23	3	3	3	3	-	-	-	-	-	-	-	-

Applicable for revised qualifications only, data to be provided year-wise for past 3 years.

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

1. Fee based Training Program under the Ministry of MSME.
2. Schemes under the different state Government.

Content availability for previous versions of qualifications:

Participant Handbook Facilitator Guide Digital Content Qualification Handbook Any Other:

Languages in which Content are available:

English

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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	<input type="checkbox"/> Theory/ Lectures - Imparting theoretical and conceptual knowledge	Books/ e-books, Presentations, Reference Material , Audio / Video Modules with 2D and 3D animation Self-Learning Videos /Broadcasts /Mobile Learning /Curated Digital content	40:60
2	<input type="checkbox"/> Imparting Soft Skills, Life Skills, and Employability Skills /Mentorship to Learners	Self-Learning Videos , Broadcasts, Mobile Learning , Curated Digital content	40:60
3	<input type="checkbox"/> Showing Practical Demonstrations to the learners	Various Furnaces, Hardness testing Machines, Testing Equipments, Video Content , E-Resource library	100:0
4	<input type="checkbox"/> Imparting Practical Hands-on Skills/ Lab Work/ workshop/ shop floor training	Furnaces, Various Testing Machines, Grinding Machines, Measuring, instruments, Hand Tools , Drafter	100:0
5	<input type="checkbox"/> Tutorials/ Assignments/ Practice	Online Question Bank, Mobile Quick test app, MCQ based tests, Practical Test on Machines	40:60
6	<input type="checkbox"/> Proctored Monitoring/ Assessment/ Evaluation/ Examinations	Assessment engine for Essays, Up-loadable file examinations, Mock test sessions	50:50
7	<input type="checkbox"/> On the Job Training (OJT)	Live Project on Heat Treatment Shop and Material Testing Lab., Measuring Instruments at concern Industry/ Institution.	100:0

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: Read and Construct the Orthographic Projection of part MSME/CCMTHT/01	PC1 Describe the various dimensioning techniques. PC2 Identify orthographic views of objects: Front, top, left side, right side using lines. PC3 Draw elements and simple assembly. PC4 Assessment examination (Written + Practical) to test basic skills on engineering drawing. PC5 Their applications will also be assessed during execution of assessable outcome and also tested during theory and practical examination. PC6 Describe Layout of drawing sheet as per B.I.S. Block letters & numerals, Single & double stroke as per BIS. PC7 Describe different types of lines as per BIS. PC8 Construct simple geometrical figures like triangle, polygons, circle, ellipse etc. PC9 Draw Projection of points, lines and plain figures. PC10 Provide dimension on object as per BIS	-	100	-	-
NOS / Module: Use and Application of Engineering Materials MSME/CCMTHT/02	PC1 Describe and explain about crystals and its formation. PC2 Distinguish between ferrous and non-ferrous metals. PC3 Identify ferrous and non-ferrous metals. PC4 Describe about Iron and steel and its various industrial	100	-	-	-

	<p>applications.</p> <p>PC5 Describe the structure of plain carbon steel.</p> <p>PC6 Describe the mechanical properties of ferrous and non-ferrous metals.</p>				
<p>NOS / Module:</p> <p>Performs Material testing Activities</p> <p>MSME/CCMTHT/03</p>	<p>PC1 Describe and demonstrate Material testing methods</p> <p>PC2 Describe about Stress strain relation</p> <p>PC3 Understand about Hardness and Hardenability</p> <p>PC4 Perform Different Hardness test</p> <p>PC5 Perform Impact test (Izod and Charpy test)</p> <p>PC6 Identify different materials by sparktesting method</p> <p>PC7 Understand Effect of alloying elements onspark</p> <p>PC8 Understand about Pressure for generating spark</p>	100	100	-	-
<p>NOS / Module:</p> <p>Assist in Heat Treatment Processes</p> <p>MSME/CCMTHT/04</p>	<p>PC1 Explain occupational health and Safety.</p> <p>PC2 Explain about safety rules.</p> <p>PC3 State the name and location of people responsible for health and safety in the workplace</p> <p>PC4 State the names and location of documents that refer to health and safety in the workplace</p> <p>PC5 Use various appropriate fire extinguishers on different types of fires correctly</p> <p>PC6 Explain the PPE in Industrial Safety.</p> <p>PC7 Explain Basic injury prevention, Hazard identification and avoidance, safety signs for Danger, Warning, caution & personal safety message</p> <p>PC8 Explain the types of Waste disposal techniques/ Management.</p>	100	100	-	-

	<p>PC9 Explain the importance of occupational health and safety at workplace. Describe Iron-Carbon phase diagram and all its components</p> <p>PC10 Describe and explain common heat treatment processes.</p> <p>PC11 Describe about cooling mediums used in heat treatment operations.</p> <p>PC12 Describe and identify each component of TTT-Curve (Isothermal transformation)</p> <p>PC13 Describe about Solid / Pack carburizing.</p> <p>PC14 Describe and explain principle and working of Liquid carburizing</p> <p>PC15 Describe and explain principle and working of Gas carburizing</p> <p>PC16 Describe about various furnaces used in Heat treatment.</p> <p>PC17 Describe about Surface Hardening treatment.</p> <p>PC18 Describe about Tool steels.</p> <p>PC19 Describe about Alloy steels.</p> <p>PC20 Describe about Low alloy steels and their Heat Treatment.</p> <p>PC21 Describe about High alloy steels and their Heat Treatment.</p> <p>PC22 Perform Heat treatment of alloy steels and tool steels</p>				
<p>NOS / Module:</p> <p>Employability Skills</p> <p>MSME/ES/01</p>	<p>PC1 Explain the major applications of MS Office</p> <p>PC2 Explain the different types of e-commerce</p> <p>PC3 List the benefits of e-commerce for retailers and customers</p> <p>PC4 Discuss how the Digital India campaign will help boost e-commerce in India</p> <p>PC5 Write applications pertaining to various matters.</p> <p>PC6 Explain power of positive attitude and Importance of Commitment</p> <p>PC7 Explain motivation and the Ways to motivate oneself and</p>	<p>100</p>	<p>-</p>	<p>-</p>	<p>-</p>

	Personal goal setting PC8 Explain the Effective & Level of Communication PC9 Explain communication and Significance of technical communication? PC10 Explain the methods of listening Skills. PC11 Explain the differences between bio-data, CV and Resume. PC12 Explain verbal and non-verbal Communication PC13 Explain how to face an interview. PC14 Explain team work, group work, team formation process PC15 How to Minimize the team conflicts PC16 Explain Ethics & values PC17 Explain the concept of entrepreneurship, and entrepreneurship v/s Management PC18 Explain the process of project report preparation for setting up a new business PC19 Explain the role of various schemes and institute for self-employment i.e MSME, DIC, NSIC, SIDBI etc. PC20 Role of financial institution to support startup PC21 Discuss the importance of saving money PC22 Discuss the main types of bank accounts PC23 Differentiate between fixed and variable costs PC24 Describe the different types of insurance products PC25 Discuss the main types of electronic funds transfers				
NOS / Module: Assist & Perform Heat Treatment operation for Metals	PC1 Perform Testing - Chemical, Mechanical and NDT. PC2 Perform operation on Various Furnaces - Vacuum Furnace, Plasma Nitriding, vacuum furnace and Salt Bath.		100		100

MSME/CCMTHT/05	PC3	Perform work in Heat Treatment Department to carry out various activities related to heat treatment shop.				
Total Marks			400	400	-	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 MSME NSQF Assessment Agency via email for the assessment.
- MSME NSQF Assessment Agency sends the assessment confirmation to respective TC.
- MSME NSQF Assessment Agency deploys the certified Assessor for executing the assessment at respective TC via online / offline mode.
- MSME NSQF Assessment Agency & respective TC Internal Assessment cell monitors the assessment process & records.

2. Testing Environment:

- MSME NSQF Assessment Agency confirms the Assessment location, date and time
- For number of candidates more than 30 separate assessors are assigned for the assessment.
- MSME NSQF Assessment Agency & 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 MSME NSQF Assessment Agency and it is verified by the MSME NSQF Assessment Agency Committee members.
- Questions are mapped to the specified assessment criteria
- All the assessors & Trainers are well qualified & trained to carry out the specified task.

4. Types of evidence or evidence-gathering protocol:

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

5. Method of verification or validation:

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

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

- The Assessment records are shared with MSME NSQF Assessment Agency & also stored at respective TC.
- Assessor fills the assessment report and shares with the MSME NSQF Assessment Agency.

On the Job Training:

- Each module will be assessed separately.
- 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

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