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

QUALIFICATION FILE

PROCESS DESIGNER – AUTOMATION

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

☐ Up skilling Dual/Flexi Qualification ☐ For ToT

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

NCrF/NSQF Level: 5.5

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

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Section 1: Basic Details

1.	**Qualification Name**	**PROCESS DESIGNER - AUTOMATION**	
2.	**Sector/s**	**Electronics & HW**	
3.	**Type of Qualification: ☒ New ☐ Revised ☐ Has Electives/Options** **☐OEM**	**NQR Code & version of existing/previous qualification:** *(change to previous, once approved)* **QG-5.5-EH-02388-2024-V1-MSME**	**Qualification Name of existing/previous version:** **Master Certificate Course in Automation and Process Control (MCCAPC)**
4.	**a. OEM Name** **b. Qualification Name** (*Wherever applicable)*	**NA** -	
5.	**National Qualification Register (NQR) Code & Version** (*Will be issued after NSQC approval)*	QG-5.5-EH-02388-2024-V1-MSME	**6. NCrF/NSQF Level: 5.5**
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**	An Automation Engineer uses technology to improve, streamline and automate manufacturing, electricity generation, warehouse distribution, mining and many other processes to reduce the need for human intervention and maximise efficiency. They are responsible for planning, implementing, and monitoring such technology. They develop and implements information and technology providing electrical, electronic, mechanical and computer-based all industrial systems to work intended and planned manner.	

9. Eligibility Criteria for Entry for Student/Trainee/Learner/Employee

a. Entry Qualification & Relevant Experience:

Qualification & Relevant Experience in the field of Electrical, Electronics and Mechatronics Engineering & its Equivalent

S. No.	Academic/Skill Qualification (with Specialization - if applicable)	Required Experience (with Specialization - if applicable)
1	• Completed 3rd year of 4-years UG/Engineering	Nil
2	• Pursuing 3rd year of 4-years UG/Engineering and continuing education (Only Summer Internship)	Nil
3	• Completed 3-year diploma (after 10th)	2 year relevant experience

b. Age: 18 Years

10. Credits Assigned to this Qualification, Subject to Assessment *(as per National Credit Framework (NCrF))*: **20**

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)	72	**360**	**60**	-	**480**
Online	**108**	-	-	-	**120**
TOTAL	**180**	**360**	**60**		**600**

(Refer Blended Learning Annexure for details)

14. Aligned to NCO/ISCO Code/s*(if no code is available mention the same)*: *2144.01 (Process Design Engineer)*

15.	**Progression path after attaining the qualification** *(Please show Professional and Academic progression)*	***Professional/Career Progress:*** Asst. Manager **Academic *Progress:*** Post Graduate in Mechatronics (NCrF/NSQF Level 6.0)	
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**	Seats are reserved as per government Norms.	
20.	**Are Greening/ Environment Sustainability Aspects Covered** *(Specify the NOS/Module which covers it)*	☒ **Yes** ☐ **No**	
21.	**Is Qualification Suitable to be Offered in Schools/Colleges**	**Schools:** ☐ **Yes** ☒ **No** **Colleges:** ☒ **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:30.04.2024**	**24. Validity Duration: 3years**	**25. Next Review Date:30.04.2027**

Section 2: Module Summary

NOS/s of Qualifications,

(In exceptional cases these could be described as components)

Mandatory NOS/s:

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

S. No	NOS/Module Name	NOS/ Module Code & Version *(if applicable)*	Core/ Non-Core	NCrF/NSQF Level	Credits as per NCrF	*Training Duration (Hours)*					*Assessment Marks*					
						Th.	Pr.	OJT-Man.	OJT-Rec.	*Total*	*Th.*	*Pr.*	*Proj.*	Viva	Total	Weightage (%) *(if applicable)*
1	Development of Industrial Automation system using PLC, SCADA, HMI & DCS.	MSME/MCCAPC/01	**Core**	**5.5**	4	**30**	**90**		-	**120**	**100**	**100**	-	-	**200**	
2	Design and testing of control & power connections of different AC & DC industrial Drives.	MSME/ MCCAPC /02	**Core**	**5.5**	**3**	**30**	**60**		-	**90**	-	**100**	-	-	**100**	
3	Development of Industrial Automation system using Pneumatics & Hydraulics system	MSME/ MCCAPC /03	**Core**	**5.5**	**2**	-	**60**		-	**60**	-	**100**	-	-	**100**	
4	Design and development Process Automation as Flow control, Temp control, Level control, Pressure control with PID.	MSME/ MCCAPC /04	**Core**	**5.5**	**3**	**30**	**60**		-	**90**	**100**	**100**	-	-	**200**	
5	Develop Programme for industrial Robot & Cobot.	MSME/ MCCAPC /05	**Core**	**5.5**	**2**	**30**	**30**		-	**60**	**100**	**100**	-	-	**200**	
6	Create and modify electrical circuit diagram, estimation & data linking using Ecad software.	MSME/ MCCAPC /06	**Core**	**5.5**	**2**	-	**60**		-	**60**	-	**100**	-	-	**100**	
7	Employability Skills	MSME/ES/02	**Non-Core**	**5.5**	**2**	**60**	-		-	**60**	**100**	-	-	-	**100**	
8	OJT	MSME/ MCCAPC /07	**Core**	**5.5**	**2**			60		**60**						
Duration (in Hours) / Total Credit / Marks					**20**	**180**	**360**	**60**	-	**600**	**400**	**600**	-	-	**1000**	

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:

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)** *(as per NCVET guidelines)*	Diploma/Degree in Electrical Engineering or Equivalent with Practical skills and knowledge required in the relevant job role at least one level higher i.e level 6.0 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)** *(as per NCVET guidelines)*	Degree in Electrical/Instrumentation/Electronics Engineering 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**	☒ Yes ☐ No *(If "Yes", details to be provided in Annexure)*
4.	**In Case of Revised Qualification, Details of Any Upskilling Required for Trainer**	Yes

Section 4: Assessment Related

1.	**Assessor's Qualification and experience in relevant sector (in years)** *(as per NCVET guidelines)*	Diploma/Degree in Electrical/Instrumentation/Electronics Engineering or equivalent with 3 years of experience in Production/Training/Design 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)** *(as per NCVET guidelines)*	Degree in Electrical/Instrumentation/Electronics Engineering or equivalent with 5 years of experience in Production/Training/Design 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)*	Post Graduate in the relevant discipline with minimum 5 years of experience in Production/Training/Design Department from Tool Room/Technology Centre of MSME or any reputed industry.

4.	**Assessment Mode** *(Specify the assessment mode)*	**Blended Type (Online + 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,** India Skills Report 2023, "Roadmap to India's Skills and talent Economy 2030" ➔ "IT Sector/ Electronics"
2.	**Latest Market Research Reports or any other source (not older than 2years) (Yes/No):** No
3.	**Government/Industry initiatives/requirement (Yes/No):** Yes
4.	**Number of Industry validation provided:** 50
5.	**Estimated nos. of persons to be trained and employed:** Approx. 500 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 *(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 I: 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	Work in familiar, predictable, routine, situation of clear choice.	Job holder is expected to execute the study of electrical symbols & drawings as SLD and analysis process required for various Electrical Equipment, their working principles in various type of load conditions which requires well developed knowledge in study and analysis under different conditions. The Job Role also involves study and understands the drawing and selects optimum Machining technique for him and modify/edit the Program as per requirement & Can perform the daily activities. The trainees also can monitor the condition of Automation devices as PLC, SCADA, DRIVES, DCS, Industrial Robot, ECAD, Hydraulic & Pneumatic components & Control the Process and solve the fault found if any which requires high depth of skill in through this qualification. The job role after attaining this qualification "Master Certificate Course in Automation and Process Control (MCCAPC)" is for Industrial Process control, work with PLC, SCADA, DRIVES, DCS, Industrial Robot, and Hydraulic & Pneumatic, ECAD well familiar with program development environment within the given time frame so as to maintain the cost involved. Hence the qualification is kept at level 5.5 as per the process is Concerned.	5.5
Professional and Technical Skills/ Expertise/ Professional Knowledge	Factual knowledge of field of knowledge or study.	Exposure to PLC, SCADA, HMI, DCS, DRIVES, ECAD, Pneumatic & Hydraulic, Industrial Robot, Process Control. Observe machine operation to verify accuracy of machine settings and to detect malfunctions or any electrical fault of the machine, using measuring instruments such as voltmeter and clamp ammeter, multimeters. Learner shall apply his/her comprehensive knowledge with clear context with a broad concept in general, Automation processes in Industry, Electrical Panel drawing & design, Industrial Robotic operation, Development of plant Automation program.	5.5

		The Learner also has the field of knowledge on the maintenance techniques and specification of electrical machines for which need to be generated with stipulated time.	
Employment Readiness & Entrepreneurship Skills & Mind-set/Professional Skill	Understand Personal Strengths \ Value ,Digital Literacy, Money Matters and Preparing for Employment & Self Employment.	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.	5.5
Broad Learning Outcomes/Core Skill	Calculate technological data for Maintenance and Automation. Prepare Maintenance plan for various machines & industrial process. Prepare programs to operate different industrial process / machines for specific operations. Prepare programs, Design Electrical panel & wiring, demonstrate, simulate and operate Robot, PLC, SCADA& HMI, DCS, and VFD System for various industrial operations. Implementation of the health and safety practices, Maintaining 5's at work place. Perform basic maintenance activity on daily basis and prepare record of Machine break down. Maintain & prepare reports as per standard / check list.	Learner shall work in a team where he/she shall gather accurate information on machining concept and requirements and communicate clearly about the work requirement to the group members through written / verbal. As per organizational standard. Ensure compliance with quality standards, policies and procedures including health and safety. Immediately report problems/failures that may impact on the machine/process to the superior staff.	5.5
Responsibility	Responsible for own work and learning as well as for the subordinates & Takes complete responsibility for delivery and quality of own work and output.	Learner is expected to perform the task as per given instructions, taking responsibility of proper execution of the program generated and its actions for the operation, quality and accuracy of the work. Industrial Automation & basic maintenance works independently and takes responsibility fully for own work, he/she is expected to have openness to learning, ability to plan and organize own work and identify and solve problems in the course of working.	5.5

		Understanding the need to take initiative and manage self-work and group tasks to improve efficiency and effectiveness.	

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	Conventional Milling		3
2	Conventional Turning		3
3	Conventional Grinding		2
4	CNC Milling		3
5	CNC Turning		3
6	CNC Simulator		10
7	PLC		5
8	HMI		5
9	Electrical Wiring Board		5
10	Sensor Simulation kit		2
11	Electrical Machines (AC & DC)		5+5
12	Bearing Trainer Kit		2

13	Electrical Safety/MCB Demonstrator Kit		2
14	Electrical Workbench		1
15	Electronics Workbench		1
16	Motorized Megger		1
17	CRO		1
18	Wattmeter Kit		1
19	Three Phase IM Trainer Kit		2
20	Battery Charger		5
21	DC Power Supply Kit		5
22	Single Phase Transformer Kit		5
23	Oil Testing Kit		1
24	MCB &HRC Fuse Testing Kit		1
25	DC Regulated Dual Power Supply		2
26	Single & Three Phase Resistive Load		2
27	Three Phase Variable Auto T/F		3
28	Dc Series Machine Lab Kit		1
29	Dc Integrated Machine		1
30	VFD (AC & DC)		1+1

31	Power pack		1
32	Compressor		1
33	Pneumatic Trainer Kit (Basic+Electro+Advance)		1
34	Hydraulic Trainer Kit (Basic+Electro+Advance)		1
35	CAD- Electrical CAD		30 System
36	PLC-PLC Software		30 System
37	SCADA-SCADA&HMI Software		30 System
38	VFD-VFD software		2 System
39	Hydraulic & Pneumatic Simulator Software		30 System
40	Multi-Meters		10

Classroom Aids

The aids required to conduct sessions in the classroom are:

1. *Simulator*
2. *Smart Board*
3. *Practice Exercise*
4. *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	Moldtek India	Miss. Priya	HR	Aditya Enclave, Hyderabad Telangana-33	8143872733	jobs@moldtekindia.com	
2	Arrow Aviation	Sanjib De	Quality Managaer	53/1/3, Hazra Road, Kolkata - 700019	9831092407	qualitymanager@arrowaviation.com	
3	Unique Enterprises	Partha Roy	Proprieter	.S.- Dasnagar, Howrah-711 13	98741 27130	partha@enterprisesindia.com	
4	SHIV ENGINEERS	S.Maity	Proprieter	BALITIKURI, HOWRAH - 711 113	7980872335	shivengineer1980@gmail.com	
5	SK Synthetics	MANISH JAIN	CEO	40 STRAND RD,3RD FLOOR KOLKATTA-700001	9331022044	SKSYNTHETICS@HOTMAIL.COM	
6	A. C. STEEL TRAIDING CORPORATION	A. C. JASWAL	PROPRIETER	BELILIOUS RD,LOAN BAZER,ROOM-141,142, HOWRAH-711101	9830073612	ACSTEEL_2004@YAHOO.CO.IN	
7	CALCUTTA TECHNO HEATERS (INDIA) PVT. LTD	M. K. SAHA	DIRECTOR	22A, DUM DUM ROAD, KOLKATA - 700 002	9831086241	MKSOCT55@GMAIL.COM	
8	MAX MILL Technologies	PRADEEP SHARMA	MANAGER	172/1,Ashokgarh,Dunlop, Baranagar, Kolkata-700108	7003462714	maxmilltechnologies@gmail.com	
9	SPECIAL ENGINEERING SERVICES LTD.	ASHIM GANGULY	JR. Factory Manager	16, COSSIPORE ROAD, KOLKATA-700 002	913325578434	sescatcn@cal2.vsl.net.in	

10	ABHAYA PRECISION INDUSTRIES PVT LTD	Abhesek Ghosh	Managing Director	70/2,YOURIBANI LANE,KOLKATTA-04	9831617997	MAIL@ABHAYAMD.COM	
11	SATYANARAYAN ENGINEERINGWORKS	NILANGSHU GHARUI	MANAGER	SHANPUR, DAONAGAR, HW-711105	7980278984	DATYANARAYANEGG@GMAIL.COM	
12	SHREE RADHA KRISHNA INDUSTRIES	MANI BHUSHAN SINGH	Proprieter	1/1d, Joy Krishna Ghosal Road, Aríadaha, Rathtala, Kolkata-700 057	9883368597	SHREERADHAKRISHNA21@GMAIL.COM	
13	NSCB AVIATION (P) LIMITED	SUBHASISH HALDER	DIRECTOR	34, Scout Para, Ganga Nagar, Kolkata 700132	8910627096	subhasish.haldar@nscbaviation.com	
14	SSK PRECISION COMPONENTS Mfg. Put. LTD.	SOUVIK SINHA	DIRECTOR	P31, KB.. Roy Garden, Garia Station Road, Kolkata-84	9831065851	SSKCNC@REDIFFMAIL.COM	
15	FOX SOLUTIONS PVT. LTD	Pralhad G DHUMAL	General Manager	Hgihway GondeDumalA NASHIK INDIA 422403	9922508208	pralhad.dhumal@foxindia.net	
16	MIKRONIX GAUGES PVT LTD		MD	B-25 MIDC , CHIKALTHANA, CH. SAMBHAJINAGAR	9822004674	MGPLAY@GMAIL.COM	
17	ALLWIN UNITED ASSOCIATION PVT.LTD	MI PANKAJ	DIRECTOR	ALLWIN UNITED ASSOCIATION PVT.LIMITED	7588537412	CONTACT@TECHNOCADDAPL.COM	
18	MIS ANNA BLOCK BORING CENTER	MASIT KHAN	PROPRIETOR	MIS ANNA BLOCK BORING CENTER	9767375083		
19	LAXMI ENTERPRISES	RANJANA BHAYYA SAHEB PAWAR	MI.MANAGER	SAINAGAR GHANEGAON MIDC WALUJ, AURANGABAD	7387431128		
20	M/S HR INDUSTRIES	VASPUT JAUGELE	PROPRIETOR	SAJAPUR, AURANGABAD	9637384737		

21	GAYATRJ AUTO COMPONENTS, AURANGABAD	MR. RANJEET METE	MANAGER	AURANGABAD	7385613842	INFO@GAYATRIAUTO.IN	
22	SHARP TOOLS	MAHESH DORLE	SR.MANAGER		9689574563		
23	CHANCHAL ENGINEERING WORKS AURANGABAD	DRYHAEBHWAR	PROPRIETOR	AURANGABAD	9765499939	CHANCHALENGINEERINGWORKS@GMAIL.COM	
24	AKSHARA ENGINEERING WORKS	SHIVAJI GAIKWAD		WALUJ MIDC AURANGABAD	9096420857		
25	ARUSHI ENGINEERING AND BREEZING	VIJAYA PARADE	MANAGER	WALUJ MIDC AURANGABAD	9049596736		
26	SR INDUSTRIES AURANGABAD	RAJENDRA SAUDAGAR MARE	SR. MANAGER	AURANGABAD	8698145607		
27	DEVA ENGINEERING AURANGABAD	ASHOK MOTINAM VEOR	SR. MANAGER	AURANGABAD	8459567793		
28	MAULI PATTERN AURANGABAD	MR.PANCHAL	PROFESSOR	AURANGABAD	9673067755		
29	NAVARATNA INDUSTRIES			WALUJ MIDC AURANGABAD			
30	PRANAW ENTERPRISES AURANGABAD	PANDRINATH DEVKAR	PROPRIETOR	AURANGABAD	9371671146	PRANAVENT@GMAIL.COM	
31	R.P INDUSTRIES	PRASHANT PATIL	CEO	MIDC CHIKATHANA AURANGABAD	8007222251	PRASHANTPATIL@GMAIL.COM	
32	TECHNO MOULD SOLUTION	MR.PANDA	PROPRIETOR	AURANGABAD	7774077907	TECHNOMOULD.SOLUTIONS@GMAIL.COM	

33	SANJAY THCHNO PRODUCTS	HEMANT CHAUDHURY	VP-MANUFACTURING	AURANGABAD	9158898090	HEMANT.CHAUDHARI@SANJAYTECHNOPRODUCTS.IN	
34	SPECIAL PRECISION	ASHIWINI TADHAV	PROPRIETOR	AURANGABAD		SPECIALASHIWIN@GMAIL.COM	
35	PARASON MACHINERY (INDIA) PVT LTD	GHAHU	GM	AURANGABAD	9325202860	AMOIL.MOGAL@PASASEN.COM	
37	PADMA INDUSTRIES	VITTHALKADOM	CEO	MIDC AURANGABAD	9421688212	VITTHALKADOM2525@GMAIL.COM	
38	VANI ENGINEERING CO.PVT LTD	SUBH	GENERAL MANAGER	AURANGABAD	9730729991	SKAPE@GMAIL.COM	
39	GLANCE ENGINEERING -6 PVT.LIMITED CHIKALTHANA	SUBH SK	GENERAL MANAGER	CHIKALTHANA	9730729991	S.KALE@GMAIL.COM	
40	SURAJ TOOLS AND ENGINEERING WORKS	DEIM	CEO	MIDC CHIKATHANA AURANGABAD	7447375273	SURAJTOOLS@GMAIL.COM	
41	JAI BHAVANI ENGINEERING WORKS		GENERAL MANAGER		9370251815		
42	S N ENGINEERINGWORKS	SNEHA	CEO	CH SAMBHAJINAGAR	9822859974	SNEHAG858@GMAIL.COM	
43	R N INDUSTRIES	TLC	CEO	KAIAGRAM, AURANGABAD	9890718928	R.N.INDUSTRIES01@GMAIL.COM	
44	MADURA DIE CAST PVT LIMITD	MADHURA	CEO	SHENDRA AURANGABAD	9422204622	MADHRADIECAST@GMAIL.COM	
45	SWAGATI ENGINEERING WIS2		CEO	CHIKALTHNA,AURANGABAD	9763714369	SWAGATIENGG@GMAIL.COM	

46	IDEAL ENTERPRISE		GENERAL MANAGER	CHIKALTHANA AURANGABAD	9763785199	IDEAL1993@GMAIL.COM	
47	INDEXABLE CUTTING TOOL	TOR	PROPRIETOR	BAJAJNAGAR,AURANGABAD			
48	INDOTURAN INDUSTRIES	USHAL SHINDE	PROPRIETOR	MIDC AURANGABAD WALUJ	9595280808		
49	CREATIVE CASTING INDUSTRIES	MR. SANJAY RANDIRE	PARTNER	K-30, MIDC WALUJ , AURANGABAD	9011001671	CREATIVECAST@REDIFFMAIL.COM	
50	PYRAMID INDUSTRIES	MR. RAJENDRA KALE	PROPRIETOR				

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
2023-24	120	80	25	20	-	-
2024-25	130	90	30	25	-	-
2025-26	150	120	35	30	-	-

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	2020-21	105	64	60	56	15	15	15	11	-	-	-	-
1.0	2021-22	128	91	71	63	14	14	14	12	-	-	-	-
1.0	2022-23	103	71	62	54	17	17	17	13	-	-	-	-

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.

Content availability for previous versions of qualifications:

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

Languages in which Content are available:

English

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, Audio/Video Modules with 2D and 3D animation Self-Learning Videos /Broadcasts/Mobile Learning/Curated Digital content	100:0
2	☐ Imparting Soft Skills, Life Skills, and Employability Skills/Mentorship to Learners	Self-Learning Videos, Broadcasts, Mobile Learning, Curated Digital content	100:0
3	☐ Showing Practical Demonstrations to the learners	Video Content, E-Resource library	40:60
4	☐ Imparting Practical Hands-on Skills/Lab Work/Workshop/Shop floor training	Soldering Kit	100:0
5	☐ Tutorials/Assignments/Practice	Online Question Bank, Mobile Quick test app, MCQ based tests, Practical Test on Equipment	100:0
6	☐ Proctored Monitoring/Assessment/Evaluation/Examinations	Assessment engine for Essays, Up-loadable file examinations, Mock test sessions	40:60
7	☐ On the Job Training (OJT)	Live Project on CNC Machines, Measuring Instruments at concern Industry/Institution	NA

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/MCCAPC/01** Development of Industrial Automation system using PLC, SCADA, HMI & DCS.	PC.1 Explain about basic fundamental of electricity. PC.2 Explain about electrical safety rules, use of safety precaution kit and tools. PC.3 Explain the PPE in Industrial Safety. PC.4 Explain Basic injury prevention, Hazard identification and avoidance, safety signs for Danger, Warning, caution & personal safety. PC.5 Demonstrate measuring instrument for electrical parameters. Use multi-meters for measurements of voltage, current & continuity. PC.6 Explain briefly types of control based on application i.e. Manual Control, Feedback Control, Sequential Control, Motion Control, and Logical Control PC.7 Demonstrate symbols of the electrical components like M.C.B., PC.8 Starter, Fuse, and Bell etc. Use Series and parallel circuit and Prepare small circuit. PC.9 Identify types of wiring, draw one line diagram using standard symbol s and do the wiring. PC.10 Identify types of wiring, draw one line diagram using standard symbols and do the wiring. PC.11 Demonstrate types of domestic and industrial wiring & JIC symbol, IEC symbol. PC.12 Discussion of different switches: push button, selector switch, limit switch. PC.13 Explain briefly about types of contacts i.e. normally closed and normally closed contacts.	100	100	-	-

	PC.14 Identify the types of switches and design control circuits for AC &DC loads. PC.15 Demonstrate different electro- mechanical switching components as: relay, contactor and timer. PC.16 Testing of Relay& contactor, identification of change over contacts as: NO- contacts, NC - contacts &common contacts. PC.17 Do the connection Panel board wiring of relay and contactors for motor control logic as: start stop, forward reverse. PC.18 Demonstrate Panel wiring for Inching, Latching, Start, and Stop Control Circuits for motor. PC.19 PC.20 Demonstrate about different sensors as: proximity inductive, proximity capacitive, proximity optical. PC.21 PC.22 Identify and test the connecting terminals for input &output signal of the sensors. PC.23 PC.24 Do the connection of sensors for different automation application logics. PC.25 PC.26 Wiring and testing of control and power circuit: 3-ø star-delta starter. PC.27 Electrical fault monitoring in both control circuit and power circuit. PC.28 Explain about industrial Automation, different type of automation & control, advantages & dis -advantages, area of application, Levels of automation. PC.29 Role of automation in various industrial process & future scopes. PC.30 Explain about Programmable Logic Controller (PLC), types of PLC. PC.31 Explain about Scan cycle, Work Memory, Data memory, PLChardware modules, communication protocols and gateway. PC.32 Demonstration of PLC Hardware installation and communication.				

	PC.33 Diagnosis of communication errors by indication and error-messages. Correction of error. PC.34 Identify of PLC Hardware and do PC.35 Practice to Communicate PLC with PC/LAPTOP system PC.36 Installation of PLC software & simulation. PC.37 Explain about PLC-programming software& features, IEC-programming languages as LAD, FBD, and STL. PC.38 Create and test LAD, FBD, STL program using bit & block-Operands. PC.39 Demonstration on LAD, FBD, STL programming language Logic Gates, AND, OR, NANAD, NOR, XOR. PC.40 Demonstration on TIMER, COUNTER, and COMPARATOR blocks, in software. PC.41 Explain about analog control in PLC, analog sensors and Voltage control method with 0-10v dc I/O signal /Current control method with 4-20 mA DC I/O signal. PC.42 Demonstration analog signal I/O of PLCusing Voltage control method with 0-10 v DC I/O signal /Current control method with 4-20 mA DC I/O signal. PC.43 Demonstration connection of I/O field devices in signal I/O of plc. Connection of different sensors & actuators with signal modules. PC.44 Demonstration connection of remote I/O PLC with server PLC using profibus cable. PC.45 Fault analysis of Profibus / Ethernet network. PC.46 Explain about supervisory control and data acquisition system (SCADA). PC.47 Functionalities and security features in SCADA architecture. PC.48 Demonstration on installation of SCADA software and driver tools. PC.49 Create different types of SCADA projects using software.				

	PC.50 Demonstrate about graphic designer, tag management, and communication to PLC. PC.51 Creating new projects, copy of project, activation & deactivation of project. PC.52 Use of Object Properties of Object Palette & Library. PC.53 Editing Of Static Properties Style, Flashing, and Display. Use of Standard Color Palette. PC.54 Create process picture & simulate using mimic logic boards. PC.55 Demonstrate about Integrate & Configure Controls in Process Pictures. PC.56 Demonstrate about Creating an Alarm Logging screen of a process. Archiving Messages. Display Message In Run Time PC.57 Creating an Online Trend, Table PC.58 Trend report. PC.59 Creating an Online Trend, Creating & Accessing Real-Time & Historical Trends. PC.60 Design PC-Based HMI Interface different field devices with SCADA system & monitoring process values. PC.61 Configuration of HMI and PLC .Upload/ Transfer programs. PC.62 Demonstration with different HMI-models as KTP, TP. PC.63 Demonstrate of connection between hard ware module & I/O field devices. PC.64 Demonstrate the Connection of multiple users with multiple PLC using Ethernet communication network (LAN). PC.65 Fault finding with indication and system messages. PC.66 Demonstrate the Programming DCS, process industry, field instruments. PC.67 Demonstrate for Programming basic DCS controller configuration. Make PC.68 Configuration and communications for DCS & SCADA systems.				

	PC.69 Operate and Monitor the Process. Create CFC Chart & SFC Charts. Import /export of projects. PC.70 Design plant hierarchy levels in DCS. PC.71 Configuration of AS, ES and OS Objects. Network protocols, communication fault analysis. PC.72 Demonstrate motor control faceplate, alarm& trend report generation, remote user access.				
NOS/Module: **MSME/MCCAPC/02** Design and testing of control & power connections of different AC & DC industrial Drives.	PC.1 Explain about basic fundamental of electrical machines. Types of electrical motors, classifications, applications. PC.2 Explain about electrical safety rules, use of safety precaution kit and tools. PC.3 Explain the PPE in Industrial Safety. PC.4 Explain Basic injury prevention, Hazard identification and avoidance, safety signs for Danger, Warning, caution & personal safety. PC.5 Demonstrate measuring instrument for electrical parameters. Use multi-meters/meters for measurements of voltage, current & continuity, phase sequence, rpm, frequency. PC.6 Describe the construction and working principle of a single phase & three phase transformer. PC.7 Explain & Demonstrate transformation ratio (step up, step down, isolation), polarity test, short circuit test, open circuit test. PC.8 Describe the construction & working principle of single phase motor. PC.9 Test Single phase induction motor routine test of capacitor start & run, permanent capacitor start & run. PC.10 Describe & demonstrate the method of staring an induction motor. PC.11 Describe the construction & working principle of three phase induction motor. PC.12 Demonstrate Start of three phase induction motor by DOL-starter, auto starter, star delta starter	100	100	-	-

	PC.13 Demonstrate three phase induction motor routine test. Testing block rotor of single phase and three phase induction motor. PC.14 Explain the working of watt meter too measure power for different load. PC.15 Demonstrate the power Measurement by two wattmeter method of three phase resistive load, inductive load. PC.16 Explain the construction & working of DC shunt & series motor. PC.17 Demonstrate the DC series motor, shunt motor routine test. PC.18 Demonstrate the Load and no load characteristics DC series, shunt generator. PC.19 Explain the method of speed control of motors. PC.20 Demonstrate different motors by varying the speed with load condition. Speed control of series motor by field diverter method & voltage control method. PC.21 Demonstrate speed control of DC shunt motor by voltage control & field control. PC.22 Demonstrate the Run of alternator, induction start synchronous run brushless dc motor, repulsion motor, synchronous motor with external dc source. PC.23 Explain about VFD, AC drive &DC drive Frequency control method. PC.24 Explain about Inverter principle, PWM technique and power switching devices, vector control. PC.25 Demonstrate different control terminals. Specifications, range, features and hardware details. PC.26 Demonstrate Parameter structure and quick commissioning procedure & motor id run. PC.27 Demonstrate BICO technology, working with programmable binary and analog I/O. PC.28 Demonstrate Drive data and Command data sets, Ramp UP & Ramp down Time.				

	PC.29 Demonstrate various drive parameters & expert list. Details of Ramp Function Generator, Speed Controller, and Current & Torque Limiter. PC.30 Demonstrate Analog Set point & Local mode of operation. Local mode of Operation through Locally Operated Control Panel. PC.31 Demonstrate Motor- Operated from Potentiometer, Binary Weighted Potentiometer, and Fixed Set point. PC.32 Demonstrate Jog Forward & Jog Reverse Operation through Local Control. PC.33 Explain Different types of CDS & DDS, Control & Status words. PC.34 Demonstrate various types of Parameterization, command word settings. Monitoring of actual motor Status, Speed, Current, Torque & Power, and Temperature etc. PC.35 Various types of Fault Codes, Error messages, diagnostics, troubleshooting.				
NOS/Module: **MSME/MCCAPC/03** Development of Industrial Automation system using Pneumatics & Hydraulics system	PC.1 Explain about pneumatic & hydraulic system, Advantages & Limitations of pneumatic & hydraulic system applications. PC.2 Explain about safety precaution in pneumatic operations. PC.3 Demonstrate Pneumatics Basic controlling equipment and its use. PC.4 Demonstrate the pressure Measurement by different pressure gauges (Digital and Analog type). PC.5 Calculate the gauge pressure, atmospheric pressure, absolute pressure. PC.6 Demonstrate different parts of air generation unit. PC.7 Demonstrate different parts of air preparation unit. PC.8 Demonstrate different parts of air consuming unit. PC.9 Explain about pneumatic direction control valves. PC.10 Demonstration of DC-valves and their different actuation process. PC.11 Explain about pneumatic Flow control valves. PC.12 Demonstration of different Flow control methods. PC.13 Explain about pneumatic pressure control valves & combination valve. PC.14 Demonstration of different pressure control valves and applications.	-	100	-	-

	PC.15 Explain about pneumatic linear actuators and Rotary actuators. PC.16 Demonstration of different pneumatic cylinders & motor actuation. PC.17 Explain about pneumatic components symbols and pneumatic schematic control logic diagrams. PC.18 Explain about pneumatic components symbols and pneumatic schematic control logic diagrams. PC.19 Explain about electro pneumatic system and electrical safety. PC.20 Demonstration of different electro pneumatic components as switches, relays, sensors, AC and DC supply. PC.21 Explain about electro-pneumatic component symbols and electro-pneumatic schematic control logic diagrams. PC.22 Demonstration of different electro pneumatic industrial control operations PC.23 Demonstration of OPC-Server communication with PC and electro-pneumatic system. PC.24 Demonstration of PLC communication with PC and electro-pneumatic system. PC.25 Explain about safety precaution in hydraulic operations. PC.26 Demonstrate hydraulics Basic controlling equipment and its use. PC.27 Demonstrate the pressure Measurement by different manometers (Analog type). Calculate the hydraulic pressure. PC.28 Demonstrate different parts of hydraulic pressure generation unit. PC.29 Explain about different filters and their application in hydraulic system. PC.30 Explain about Hydraulic direction control valves. PC.31 Demonstration of DC-valves and their different actuation process. PC.32 Explain about hydraulic Flow control valves. PC.33 Demonstration of different Flow control methods. PC.34 Explain about hydraulic pressure control valves. PC.35 Demonstration of different pressure control valves and pressure relief valves with applications.				

	PC.36 Explain about hydraulic linear actuators and Rotary actuators. PC.37 Demonstration of different hydraulic cylinders & motor actuation. PC.38 Explain about hydraulic components symbols and hydraulic schematic control logic diagrams. PC.39 Explain about hydraulic components symbols and hydraulic schematic control logic diagrams. PC.40 Explain about electro-hydraulic system and electrical safety. PC.41 Demonstration of different electro -hydraulic components as switches, relays, sensors, AC and DC supply. PC.42 Explain about electro-hydraulic component symbols and electro-hydraulic schematic control logic diagrams. PC.43 Demonstration of different electro-hydraulic industrial control operations. PC.44 Demonstration of OPC-Server communication with PC and electro-hydraulic system. PC.45 Demonstration of PLC communication with PC and electro-hydraulic system. PC.46 Explain about maintenance of hydraulic & pneumatic system& demonstration.				
NOS/Module: **MSME/MCCAPC/04** Design and development Process Automation as Flow control, Temp control, Level control, Pressure control with PID.	PC.1 Explain about Process Automation, field devices, sensors, control methods, P, PI, and PID Control. PC.2 Explain about different Sensors and Transducers. Use of industrial sensor to sense different object by deepening on construction of material. PC.3 Demonstrate Capacitive Proximity Sensor, Inductive Proximity Sensor, opto- coupler Sensor, magnetic Reed Switch Sensor, limit Switch, optical Proximity Sensor, float sensor, ultrasonic sensors. PC.4 Demonstrate general purpose use of Gas Sensor, Alcohol Sensor, Hall Effect Sensor, and Color Sensor on LCD, Fire Sensor, and Smoke Sensor.	-	100	-	-

	PC.5 Demonstrate the technique of measuring strain, strain gauge and cantilever assembly. PC.6 Demonstrate to measure the torque, electrostatic effect, of Load Cell, Piezoelectric sensor, PIR Sensor. PC.7 Demonstrate to measure the temperature by different temperature measuring instrument. Sensor LM 35, RTD, Thermistor, Thermocouple. PC.8 Demonstrate the use of light based switching device, Photoconductive cell (LDR), Phototransistor, Photodiode, IR Receiver and Transmitter Sensor, TSOP1738. PC.9 Demonstrate electronics circuit simulators and its properties. Programme with graphical programming language. PC.10 Demonstrate op-amp and its application. Programme with graphical programming language. PC.11 Explain about IOT Interaction with controller like Arduino, Node MCU. PC.12 Explain Basics of and raspberry pi. PC.13 Demonstrate Connection of sensors, Wi-Fi module with controller. PC.14 Explain about PID Control. PC.15 Demonstrate of different Assembly components, Assembly and commissioning. PC.16 Demonstrate Study of P & ID Flow Diagram of Edu Kit PA Basic. PC.17 Explain about FLOW control, components, and flow sensors. PC.18 Demonstrate about FLOW control, components, and flow sensors. PC.19 Explain about LEVEL control, components, and LEVEL sensors. PC.20 Demonstrate about LEVEL control, components, and LEVEL sensors. Up Stream Filling & Down Stream Filling (Edu Kit PA Basic), PC.21 Explain about PRESSURE control, components, and Pressure sensors. PC.22 Demonstrate about PRESSURE control, components, and Pressure sensors. PC.23 Demonstrate about TEMP control, components, and Pressure sensors.				

	PC.24 Demonstrate P, PI and PID control in various process involves Level, Flow, Pressure, and Temperature. PC.25 Demonstrate Connections of EDU KIT PA ADVANCE & Measuring & Control, Fill level, Flow & Pressure Control with P& PID, Level Control using 2Pkt, P& PID (Using Fluid Lab-PA Process Software through Easy Port). PC.26 Demonstrate Overview on COMPACT WORK STATION & P&ID FLOW DIAGRAM, Measuring & Control, Fill level, Flow & Pressure Control with P& PID, Level Control using 2Pkt, P& PID (Using Fluid Lab-PA Process Software) with COMPACT WORK STATION. PC.27 Demonstrate Simulation Using PID using MPS-PA(FILTERING),(BOTTLING), (MIXING) &(REACTOR) , Measuring & Control ,Characteristics of Level, Flow, Pressure & Temperature, Closed loop Control using 2Pkt and Continues Process (Using Fluid Lab-PA Closed Loop Software)-Pressure Control. PC.28 Demonstrate Simulation through Excel sheet & Easyport Connection using MPS – PA. PC.29 Demonstrate of IOT using Easy Port with MPS – PA (BOTTLING) - Level Control (Using Fluid Lab-PA Process Software)				
NOS/Module: **MSME/MCCAPC/05** Develop Programme for industrial Robot & Cobot.	PC.1 Explain History & evolution of INDUSTRIAL ROBOT. PC.2 Explain Robot anatomy - Anatomy, Links, joints and joint notation scheme PC.3 Explain types of mechanical joints, progressive advancement, types of robot configurations, Robot's working limit. PC.4 Explain SAFETY of industrial robot. Robotics and scope. PC.5 Demonstrate mechanical joints, configurations, working limit, Axis-Of Freedom. PC.6 Demonstrate Manipulating the Robot, Measurement of angular limits of Robot.	-	100	-	-

	PC.7 Demonstrate Manipulation of the Robot in Cartesian Co-ordinate & world-coordinate System. PC.8 Explain plant layout design for industrial Robot application & Work space. PC.9 Demonstrate Robot Base Calibration. PC.10 Demonstrate Robot Tool Calibration PC.11 Explain about Point to Point (PTP) & Linear (LIN) Robot Motion Programming. PC.12 Demonstrate Point to Point (PTP) & Linear (LIN) Robot Motion Programming. PC.13 Explain about Circular (CIRC) Robot Motion Programming. PC.14 Demonstrate Circular (CIRC) Robot Motion Programming. PC.15 Explain Robot Motion Programming using Profiles. PC.16 Demonstrate Robot Motion Programming using Profiles. PC.17 Demonstrate Motion Programming using Custom Tool and Base. PC.18 Demonstrate Motion Programming using LOOPS and INTERRUPTS. PC.19 Demonstrate Automatic Operation of Industrial Robots PC.20 Explain & Demonstrate Robot Motion programming Using Logical Commands. PC.21 Explain about advance programming concepts of Robot. PC.22 Demonstrate advance programming of industrial Robot.				
NOS/Module: **MSME/MCCAPC/06** Create and modify electrical circuit diagram, estimation & data linking using Ecad	PC.1 Explain the Importance of Engineering drawing, PC.2 Explanation the scope and objective of Engineering Drawing PC.3 Demonstrate and explain drawing Standards: Size of drawing sheets – Layout of drawing sheet – Title Blocks – Types of lines – Folding of drawing sheets. PC.4 Use of dimensioning techniques according to Standard of dimensions PC.5 Demonstrate orthographic & Isometric projection by using a viewing box and a model PC.6 Use of symbol in projections -Front view, top view and side view	-	100	-	-

	PC.7 Demonstrate the use of AutoCAD and AutoCAD interface PC.8 Apply coordinates systems in AutoCAD PC.9 Demonstrate the use of tool bars. PC.10 Create solid field area (Hatching, Gradient) PC.11 Edit objects using the object property tool bar and various methods. PC.12 Use sketch settings and Style toolbar (text style, Multileader style etc.) PC.13 Edit object using object property toolbar & various method. PC.14 Create the replica of model using copy, array command PC.15 Work with models in the modify toolbar. PC.16 Identify the appropriate Tool to create and modify the model PC.17 Change the orientation of the object by aligns, offset, rotate command PC.18 Apply standard dimension in a mechanical component. PC.19 Use of dimensioning Methods: Linear, Align, ordinates, Radius, Diameter, Arc length, angular etc, PC.20 Use of leader with text, block reference PC.21 Edit or modify the CAD Drawings PC.22 Use of layers Management and its applications PC.23 Apply GD& T Symbols in drawings PC.24 Develop proper drawing layout. PC.25 Use of 3D, 3D environment & toolbars. Extrude, revolve, Boolean operation. PC.26 Use of Sweep, Loft, and Press pull. 3d Move, 3d Rotate, 3d Array, 3d Align. PC.27 Use of AutoCAD Electrical Software Workspace Awareness, Tool Bars, Tool Pallets. PC.28 Insert component working with project manager. Overview about relay, contactor, timer and old. PC.29 Explain about drafting features-copy, move, delete, scoot, align, link component, attribute reverse/ flip component, retag and update component.				

	PC.30 Create For/Rev Control circuit of 3ph induction motor using contactor and for/rev control circuit of 1ph dc motor using relay. PC.31 Create Star-Delta Control Circuit, Start-Delta with For-Rev Control Ckt. PC.32 Create Multibus, wire number, wire color, wire size, wire labeling, and overview on timer power ckt of F-R. PC.33 Symbol builder, cuircuit builder, icon menu wizard, power ckt of Star-Delta, Star-Delta with F-R. PC.34 Panel design of F-R, A-D, panel design of F-R with S-D, schematic and panel report generation, export data to excel format. PC.35 Use of EPLAN for power circuit, wire coloring, labeling with 2D&3D panel designing. PC.36 Develop PLC- I/O positioning, symbol macro, report generation.				
NOS/Module: **MSME/ES/01** Employability Skills	PC.1 Discuss the Employability Skills required for jobs in various industries PC.2 List different learning and employability related GOI and private portals and their usage PC.3 Explain the constitutional values, including civic rights and duties, citizenship, responsibility towards society and personal values and ethics such as honesty, integrity, caring and respecting others that are required to become a responsible citizen PC.4 Show how to practice different environmentally sustainable practices. PC.5 Discuss importance of relevant 21st century skills. PC.6 Exhibit 21st century skills like Self-Awareness, Behavior Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn etc. in personal or professional life. PC.7 Describe the benefits of continuous learning. PC.8 Show how to use basic English sentences for everyday conversation in different contexts, in person and over the telephone PC.9 Read and interpret text written in basic English PC.10 Write a short note/paragraph / letter/e -mail using basic English	100	-	-	-

	PC.11 Create a career development plan with well-defined short- and long-term goals PC.12 Demonstrate how to communicate effectively using verbal and nonverbal communication etiquette. PC.13 Explain the importance of active listening for effective communication PC.14 Discuss the significance of working collaboratively with others in a team PC.15 Demonstrate how to behave, communicate, and conduct oneself appropriately with all genders and PwD PC.16 Discuss the significance of escalating sexual harassment issues as per POSH act. PC.17 Outline the importance of selecting the right financial institution, product, and service PC.18 Demonstrate how to carry out offline and online financial transactions, safely and securely PC.19 List the common components of salary and compute income, expenditure, taxes, investments etc. PC.20 Discuss the legal rights, laws, and aids PC.21 Describe the role of digital technology in today's life PC.22 Demonstrate how to operate digital devices and use the associated applications and features, safely and securely PC.23 Discuss the significance of displaying responsible online behavior while browsing, using various socialmedia platforms, e-mails, etc., safely and securely PC.24 Create sample word documents, excel sheets and presentations using basic features PC.25 Utilize virtual collaboration tools to work effectively PC.26 Explain the types of entrepreneurship and enterprises PC.27 Discuss how to identify opportunities for potential business, sources of funding and associated financial and legal risks with its mitigation plan				

	PC.28 Describe the 4Ps of Marketing-Product, Price, Place and Promotion and apply them as per requirement PC.29 Create a sample business plan, for the selected business opportunity PC.30 Describe the significance of analyzing different types and needs of customers PC.31 Explain the significance of identifying customer needs and responding to them in a professional manner. PC.32 Discuss the significance of maintaining hygiene and dressing appropriately PC.33 Create a professional Curriculum Vitae (CV) PC.34 Use various offline and online job search sources such as employment exchanges, recruitment agencies, and job portals respectively PC.35 Discuss the significance of maintaining hygiene and confidence during an interview PC.36 Perform a mock interview PC.37 List the steps for searching and registering for apprenticeship opportunities				
	Total Marks	**300**	**600**	**-**	**-**

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