QUALIFICATION FILE – Micro-Credentials

DCS Programmer and Troubleshooter

☒Public ☐ Private

☒Upskilling ☐ Dual/Flexi Qualification ☐For ToT ☐For ToA

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

NCrF/NSQF Level: 4

Submitted By:

IASC SECTOR SKILL COUNCIL

324, US Complex, New Delhi- 110076

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Section 1: Basic Details

<table>
<tr><td>1.</td><td>Micro Credential-Qualification Name</td><td colspan="2">DCS Programmer and Troubleshooter</td></tr>
<tr><td>2.</td><td>Sector/s</td><td colspan="2">IASC Sector Skill Council</td></tr>
<tr><td>3.</td><td>National Qualification Register (NQR) Code & Version (Will be issued after NSQC approval.)</td><td>2022/EHW/IASC/06508</td><td>4. NCrF/NSQF Level: 4</td></tr>
<tr><td>5.</td><td>Brief Description of the Micro-Credential</td><td colspan="2">This OS individual is responsible for programming logic of DCS for controlling various processes of industries and troubleshooting any errors that may occur during the operation of the process plant.</td></tr>
<tr><td>6.</td><td>Eligibility Criteria for Entry for Students/Trainee/Learner/Employee</td><td colspan="2">a. Entry Qualification & Relevant Experience
b. Age 18+:

<table>
<tr><th>S. No.</th><th>Academic/Skill Qualification (with specialization- if applicable)</th><th>Relevant Experience (with specialization- if applicable)</th></tr>
<tr><td></td><td>10th + 1 year NTC
OR
10th + 1 year experience in relevant field OR
Completed 1st year or pursuing 2nd year
OR
Previous relevant Qualification of NSQF Level 3</td><td>1 year NAC in relevant field

3 years Engineering Diploma (after 10th) in relevant field
1 year experience in relevant field</td></tr>
<tr><td></td><td>*Instrumentation/EEE/ECE/Mechanical/Electrical/Mechatronics</td><td></td></tr>
</table>
</td></tr>
<tr><td>7.</td><td>Credits Assigned to this Qualification, Subject to Assessment (as per National Credit Framework (NCrF))</td><td>14</td><td>8. Common Cost Norm Category (I/II/III) (wherever applicable): I</td></tr>
</table>

9.	**Any Licensing Requirements/ Pre-requisites for Undertaking Training** *(wherever applicable)*	NA
10.	**Expected Outcomes of the Micro-Credential**	**Terminal learning outcomes are:** • Identify the role and responsibilities of a DCS Programmer and Troubleshooter. • Discuss how to develop a DCS program • Perform on-site testing and commissioning of DCS project. • Demonstrate how to troubleshoot errors/issues in the machine and process plant. • Demonstrate testing of hardware components and logic in PLC and install replaced products. • Work effectively and efficiently in a team. • Comply with the health and safety procedures at workplace.

<table>
<tr><td></td><td></td><td></td></tr>
<tr><td>11.</td><td>Training Duration by Modes of Training Delivery (Specify Total Duration as per selected training delivery modes and as per requirement of the qualification)</td><td>☒Offline Only ☐ Online Only ☐Blended

<table>
<tr><th>Training Delivery Mode</th><th>Theory (Hours)</th><th>Practical (Hours)</th><th>Total (Hours)</th></tr>
<tr><td>(Refer Blended Learning Annexure for Details)
Classroom (offline)</td><td>150</td><td>180</td><td>420</td></tr>
<tr><td>Online</td><td></td><td></td><td></td></tr>
</table></td></tr>
<tr><td>12.</td><td>Assessment Criteria</td><td>
<table>
<tr><th>Theory (Marks)</th><th>Practical (Marks)</th><th>Project (Marks)</th><th>Viva (Marks)</th><th>Total (Marks)</th><th>Passing %</th></tr>
<tr><td>180</td><td>230</td><td>0</td><td>0</td><td>450</td><td>100</td></tr>
</table></td></tr>
<tr><td>13.</td><td>Is the Qualification Amenable to Persons with Disability</td><td>☐ Yes ☒No If “Yes”, specify the applicable type of Disability:</td></tr>
<tr><td>14.</td><td>How participation of women will be encouraged?</td><td></td></tr>
<tr><td>15.</td><td>Other Indian Languages in which the Micro Credential will be implemented.</td><td>No</td></tr>
<tr><td>16.</td><td>Is similar Micro Credential Qualification(s) available on NQR-if yes, justification for this qualification</td><td>☐ Yes ☒No URLs of similar Qualifications:</td></tr>
</table>

17.	**Name and Contact Details Submitting/Awarding Body SPOC**	**Name: Mayank Bansal** **Email: sqa**@iascsectorskillcouncil.in **Contact No.: 7599140834** **Website: https://iascsectorskillcouncil.in**	
18.	**NSQC Approval Date: 20.11.2020**	**19. Validity Duration: 5 years**	**20. Next Review Date: 20/11/2025**

Section 2: Training Related

1.	**Trainer's Qualification and experience in relevant sector (in years)** *(as per requirement and NCVET guidelines)*	**Post-Graduation with relevant Field** (Instrumentation/EEE/ECE/Mechanical/Electrical/Mechatronics)
2.	**Master Trainer's Qualification and experience in relevant sector (in years)** *(as per requirement and NCVET guidelines)*	**Post-Graduation with one Year Industry related Experience** (Instrumentation/EEE/ECE/Mechanical/Electrical/Mechatronics)
3.	**Tools and Equipment Required for Training**	☐ **Yes** ☐ **No** (*If "Yes", details to be provided in Annexure)*

Section 3: Assessment Related

1.	**Assessor's Qualification and experience in relevant sector (in years)** *(as per requirement and NCVET guidelines)*	**Post-Graduation with one Year Industry related Experience** (Instrumentation/EEE/ECE/Mechanical/Electrical/Mechatronics)
2.	**Proctor's Qualification and experience in relevant sector (in years)** *(as per requirement and NCVET guidelines)*	**Post-Graduation with Two Year Industry related Experience** (Instrumentation/EEE/ECE/Mechanical/Electrical/Mechatronics)
3.	**Lead Assessor's/Proctor's Qualification and experience in relevant sector (in years)** *(as per requirement and NCVET guidelines)*	**Post-Graduation with Three Year Industry related Experience** (Instrumentation/EEE/ECE/Mechanical/Electrical/Mechatronics)

4.	**Assessment Mode** *(Specify the assessment mode)*	**Mode: ☐Online Only ☐ Offline Only ☒Blended**
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 4: Evidence of Need of the Micro Credential

As per the NCVET Guidelines for evidence of need, provide the required Annexure/Supporting documents.

1.	Government /Industry initiatives/ requirement (Yes/No): YES
2.	Number of Industry validation provided: 5
3.	Estimated number of people to be trained:

Section 5: Annexure Check List

Specify Annexure Number and Name.

1.	**Annexure:** NCrF/NSQF level justification based on NCrF Level/NSQF descriptors *(Mandatory)*	Filled
2.	**Annexure:** Learning Outcomes and Assessment Criteria *(Mandatory)*	Filled
3.	**Annexure:** Assessment Strategy *(Mandatory)*	*Filled*
4.	**Annexure:** List of tools and equipment relevant for qualification *(Mandatory – Except in case of online course)*	*Filled*

5.	**Annexure:** Blended Learning *(Mandatory in case selected mode of delivery is "Blended Learning")*	*Filled*
6.	**Annexure:** Acronym and Glossary *(Optional)*	*Filled*

Annexure: Evidence of Level

NCrF/NSQF Level Descriptors	Key requirements of the job role/outcome of the qualification	How the job role/ outcomes relate to the NCrF/NSQF level descriptor	NCrF/NSQF Level
Professional Theoretical Knowledge/Process			
Professional and Technical Skills/ Expertise/ Professional Knowledge			
Employment Readiness & Entrepreneurship Skills & Mind-set/Professional Skill			
Broad Learning Outcomes/Core Skill			
Responsibility			

Annexure: Learning Outcomes and Assessment Criteria

Detailed learning outcomes and assessment criteria for the qualification are as follows:

S. No.	Learning Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
1.	*identify prerequisites for DCS programming*	24	24	-	5
2.	*PC1. identify customer requirements for the DCS control panel, including the number and type of field equipment such as switches, push buttons, lamps, relays, contactors, etc.*	2	-	-	-
3.	*PC2. illustrate the wiring diagrams between the DCS modules and the equipment used in the panel to the client*	4	-	-	-
4.	*PC3. commission the DCS module as per the illustrated wiring diagrams*	4	-	-	-
5.	*PC4. power the DCS and remote panel using main power supply unit*	3	4	-	1
6.	*PC5. check the signal modules and wiring between signal modules, other components, and special modules to ensure the proper functioning of DCS control panel*	2	5	-	1
7.	*PC6. perform Factory Acceptance Test (FAT) on the panel*	2	5	-	1
8.	*PC7. analyse the different types of programming language available within the customer approved software in order to check the configuration capability with the installed DCS panel*	2	5	-	-
9.	*PC8. check the availability of communication port on PC/laptop, communication protocol cable and protocol converter to be used for communication between programming software, DCS and operator station (HMI)*	2	5	-	1
	PC9. collect information on basic programming blocks special programming blocks, communication programming blocks, and the process for their timely execution in the controller	3	-	-	1
10.	*develop the program/logic/code for the DCS controller*	16	26	-	5
11.	*PC10. use appropriate programming language as per standards*	4	4	-	-
12.	*PC11. create an input-output (IO) list with comments based on the inputs given by the customer*	2	4	-	1
13.	*PC12. set parameters in signal modules and other remote devices for ensuring better performance in the plant*	2	4	-	1
14.	*PC13. develop the program as per customer inputs and functional process description*	3	5	-	1
15.	PC14. develop pictures and graphic objects and provide animations as per customer's requirement and according to Piping & Instrumentation Diagram (P&ID)	3	5	-	1
	PC15. develop archive system and security levels in the DCS project	2	4	-	10
	NOS Total	40	50	-	10

	test the functionality of physical input and output	10	13	-	5
16.	**PC1. test the program using software checks like compilation**	**2**	**2**	-	**1**
17.	**PC2. download the compilation error-free program and transfer it to the computer based internal software simulator for further checks**	**1**	**1**	-	-
18.	**PC3. perform the steps to activate the respective inputs in software simulator to check the automation logic and thereby identify any error**	**2**	**3**	-	**1**
19.	**PC4. modify the logical error, data address overlap and wrong IO address access to maximise program stability**	**1**	**1**	-	-
20.	**PC5. apply further checks to eliminate the logical issues and address errors**	**1**	**2**	-	**1**
21.	**PC6. perform the steps to activate the DCS project in runtime and carry out the input output checks on DCS systems**	**2**	**2**	-	**1**
22.	**PC7. test the animations on the runtime screens**	**1**	**2**	-	**1**
23.	*transfer logic to the DCS project*	**7**	**9**	-	**2**
24.	**PC8. collect information about the architecture of the DCS system in the plant**	**1**	**1**	-	-
25.	**PC9. connect actual sensors and actuators to signal modules to check the hardware components**	**2**	**1**	-	-
26.	**PC10. prepare PC stations by configuring and installing the required software/ licenses for DCS project**	**1**	**1**	-	-
27.	**PC11. perform the steps to transfer the DCS projects to respective PC stations, for example, to server PC and client PC**	**2**	**3**	-	**1**
28.	**PC12. perform the steps to establish the connections between server PC and controller as well as server PC and client PC**	**1**	**3**	-	**1**
29.	*commission the program using trial runs for the process/application*	**6**	**6**	-	-
30.	**PC13. manage permissions for execution of process through program and preliminary check of IO's**	**1**	**1**	-	-
31.	**PC14. identify the availability of resources for trial runs**	**1**	**1**	-	-
32.	**PC15. organise training regarding the sequence of operation in case of emergency**	**1**	**1**	-	-
33.	**PC16. prepare a standard operating procedure (SOP) for the logic and DCS operation developed**	**1**	**1**	-	-
34.	**PC17. create backup of the final DCS project to be submitted to the plant head**	**2**	**2**	-	-
	develop the error handling program	**7**	**9**	-	**2**
35.	**PC18. identify hardware and software related errors in the plant**	**1**	**1**	-	-
36.	**PC19. use appropriate programming logics to avoid non functionality of controller due to hardware errors**	**1**	**2**	-	-
37.	**PC20. generate outputs from error handling program for error monitoring on DCS systems**	**2**	**2**	-	-
38.	**PC21. examine the error handling programs by creating faults like supply failure,**	**1**	**2**	-	**1**

	communication break, IO channel error, module failure, etc.				
39.	**PC22. implement site acceptance test (SAT) and send the report to customer**	**2**	**2**	-	-
40.	*troubleshoot DCS project on-site*	**10**	**13**	-	**1**
41.	PC23. identify the problem in the plant by checking with the supervisor/engineer	**1**	**1**	-	-
42.	PC24. check the availability of additional modules, equipment, electrical components as well as software and program backup on-site	**1**	**2**	-	-
43.	**PC25. check the connection of different modules as per control panel drawing, settings of instruments as per installation guidelines, and functioning of the PC stations used for operating the plant**	**1**	**2**	-	-
44.	**PC26. test the panel, signal modules, earthing, power supply and communication cables used in the plant**	**2**	**2**	-	-
45.	**PC27. verify whether the controller and its module are in operating state and modify the running project program, if it is required, to rectify the faults**	**1**	**2**	-	-
46.	**PC28. match the product with the drawing according to the catalogue number and replace module/equipment, if it is found faulty**	**1**	**1**	-	-
47.	**PC29. start the plant on-site, verify/monitor the parameter reading according to set parameters and take the program backup before and after troubleshooting**	**2**	**2**	-	-
48.	**PC30. prepare a site report after troubleshooting and mention the remedy**	**1**	**1**	-	-
49.	**NOS Total**	**40**	**50**	-	**10**
50.	*Work as per the organisational team environment*	**15**	**8**	-	**5**
51.	**PC1. identify team objectives and goals, team members by name, their role and responsibilities, greet them appropriately and respond to their greetings**	**4**	**4**	-	-
52.	**PC2. comply with organisation's policies and procedures for working with team members within and outside the organisation—especially related to privacy, confidentiality and security**	**4**	-	-	**2**
53.	**PC3. work as per the environment to build trust and mutual respect**	**2**	-	-	**1**
54.	**PC4. participate in decision making by providing facts and figures, give / accept constructive suggestions, take initiatives to help team members arrive at workable decisions and meet the goals**	**4**	**4**	-	**1**
55.	**PC5. accept decisions professionally and support even if they do not match suggestions and personal views**	**1**	-	-	**1**
56.	*Communicate effectively*	**6**	**10**	-	**1**
57.	**PC6. communicate professionally as per organisation's protocols, using appropriate mode of communication—verbal, written, mail, phone or text—and clearly articulate the message to ensure that the receiver understands the message**	**2**	**6**	-	**1**
58.	**PC7. listen to team members attentively, respond promptly, seek / provide clarifications if**	**2**	-	-	-

	required				
59.	**PC8. share important information with the team timely and refrain from overloading them with unnecessary and unsolicited information**	**4**	**4**	-	**1**
60.	*Co-operate with team members and superiors*	**8**	**18**	-	**1**
61.	**PC9. perform own role, receive inputs from others and make adjustments within permissible rules as per requirement, to produce output in time for other team members to follow**	**2**	**6**	-	-
62.	**PC10.** help team members to perform their role effectively and provide any clarifications/support they need, including tools /equipment / common resources as well as resolve any contentious issues amicably, involving the team lead or the supervisor if needed	-	**6**	-	**1**
63.	**PC11.** let team members know in good time if commitments cannot be carried out, explaining the reasons, and provide alternate solutions, if any; let the team lead know about this	**2**	-	-	-
64.	**PC12.** act in the interest of the team and the organisation, take initiative to correct the wrong, seek help or escalate if needed to ensure that things do not 'fall through the gap' and team goals are achieved	**4**	**6**	-	-
65.	*Respect customs / preferences and gender / ability differences*	**11**	**14**	-	**3**
66.	**PC13.** follow organisation's policies and statutory guidelines w.r.t seeking information about others' customs / preferences, making references or comments on social customs / preferences, and refrain from hurting sentiments	**2**	**4**	-	-
67.	**PC14.** accommodate team members' preferences to the extent feasible, and in case they come in the way of fulfilling team goals, discuss with the supervisor/ team leader	**2**	-	-	1
68.	**PC15.** ensure personal behaviour, conduct and communication styles, taking gender and disability of the person into consideration	**2**	6	-	1
69.	**PC16.** list the different types of disabilities with their respective issues and ways to help them overcome challenges	**1**	-	-	**1**
70.	**PC17.** use inclusive language, verbal as well as non- verbal, irrespective of the disability and the gender of the person	**2**	4	-	-
71.	**PC18.** ensure equal treatment for all clients, colleagues and co-workers while respecting their personal space	**2**	-	-	-
72.	**NOS Total**	**40**	**50**	-	**10**
73.	*Adhere to standard safety procedures of the company*	**13**	**12**	-	**5**
74.	**PC1. comply with general safety procedures and those for handling an equipment, hazardous material or tool, followed in the company**	**2**	2	-	-
75.	**PC2. remove finger rings or any other metal objects likely to interfere with the work before working on the unit**	**2**	4	-	-
76.	**PC3. use of safety materials such as goggles, gloves, ear plugs, caps, ESD pins, covers, shoes, etc.**	**4**	2	-	1

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77.	**PC4. escalate the issue about hazardous materials or things found in the premises or any breach of safety procedure in the company**	**1**	**1**	-	-
78.	**PC5. ensure zero accidents at work**	**1**	**1**	-	**1**
79.	**PC6. avoid damage of components due to negligence in ESD procedures or any other loss due to safety negligence**	**1**	**1**	-	**1**
80.	**PC7. participate regularly in fire drills or other safety related workshops organised by the company**	**2**	**1**	-	**1**
81.	*Maintain good health and posture*	**6**	**8**	-	**1**
80.	**PC8. maintain appropriate posture, especially in long hours of sitting or standing position and in handling heavy materials**	**2**	**3**	-	**1**
81.	**PC9. participate in company organised health sessions such as yoga, physiotherapy or games**	**1**	**1**	-	-
82.	**PC10. handle heavy and hazardous materials with care, while maintaining appropriate posture, using suitable tools and handling equipment such as trolleys, jacks and ladders**	**2**	**4**	-	-
83.	*Effective waste management/recycling practices*	**4**	**5**	-	**1**
84.	**PC11. identify recyclable and non-recyclable, and hazardous waste generated to be segregated accordingly**	**2**	**1**	-	**1**
85.	**PC12. dispose non-recyclable waste and hazardous waste as per recommended processes**	**1**	**3**	-	-
86.	**PC13. deposit recyclable and reusable material at identified location**	**1**	**1**	-	-
87.	*Adopt learning and self-direction*	**4**	**5**	-	**1**
88.	**PC14. understand importance of skill advancement and develop mastery**	**1**	**1**	-	**1**
89.	**PC15. adapt product / service to meet success criteria**	**1**	**2**	-	-
90.	**PC16. understand accountability for timely completion of tasks**	**1**	**1**	-	-
91.	**PC17. manage to express emotions in appropriate ways at workplace and understand the cause for the emotions**	**1**	**1**	-	-
92.	*Develop system thinking in problem solving*	**2**	**2**	-	**1**
93.	**PC18. analyse the problem accurately and communicate different possible solutions to the problem**	**1**	**1**	-	-
94.	**PC19. manage to estimate the cause of the problem and validate**	**1**	**1**	-	**1**
95.	*Material/Resources conservation practices*	**11**	**18**	-	**1**
96.	**PC20. identify ways to optimize usage of material including water and electricity / energy in various tasks/activities/processes**	**2**	**2**	-	-
97.	**PC21. check for spills/leakages in various tasks/activities/processes and plug them or**	**1**	**2**	-	-

	escalate to appropriate authority				
98.	PC22. carry out routine cleaning of tools, machines and equipment	3	6	-	-
99.	PC23. check if the equipment/machine is functioning normally before commencing work and rectify wherever required and report malfunctioning (fumes/sparks/emission/vibration/noise) or any lapse in maintenance of equipment	3	4	-	-
100.	PC24. ensure electrical equipment and appliances are properly connected and turned off when not in use	2	4	-	1
101.	NOS Total	40	50	-	10
102.	*Introduction to Employability Skills*	1	1	-	-
103.	PC1. identify employability skills required for jobs in various industries	-	-	-	-
104.	PC2. identify and explore learning and employability portals	-	-	-	-
105.	Constitutional values – Citizenship	1	1	-	-
106.	PC3. recognize the significance of constitutional values, including civic rights and duties, citizenship, responsibility towards society etc. and personal values and ethics such as honesty, integrity, caring and respecting others, etc.	-	-	-	-
107.	PC4. follow environmentally sustainable practices	-	-	-	-
108.	*Becoming a Professional in the 21st Century*	2	4	-	-
109.	*PC5. recognize the significance of 21st Century Skills for employment*	-	-	-	-
110.	PC6. practice the 21st Century Skills such as Self- Awareness, Behaviour Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn for continuous learning etc. in personal and professional life	-	-	-	-
111.	*Basic English Skills*	2	3	-	-
112.	PC7. use basic English for everyday conversation in different contexts, in person and over the telephone	-	-	-	-
113.	PC8. read and understand routine information, notes, instructions, mails, letters etc. written in English	-	-	-	-
114.	PC9. write short messages, notes, letters, e-mails etc. in English	-	-	-	-
115.	*Career Development & Goal Setting*	1	2	-	-
116.	PC10. understand the difference between job and career	-	-	-	-
117.	PC11. prepare a career development plan with short- and long-term goals, based on aptitude	-	-	-	-
118.	*Communication Skills*	2	2	-	-
119.	PC12. follow verbal and non-verbal communication etiquette and active listening techniques in various settings	-	-	-	-
120.	PC13. work collaboratively with others in a team	-	-	-	-
121.	*Diversity & Inclusion*	1	2	-	-

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122.	**PC14. communicate and behave appropriately with all genders and PwD**	-	-	-	-
123.	**PC15. escalate any issues related to sexual harassment at workplace according to POSH Act**	-	-	-	-
124.	*Financial and Legal Literacy*	**2**	**3**	-	-
125.	**PC16. select financial institutions, products and services as per requirement**	-	-	-	-
126.	**PC17. carry out offline and online financial transactions, safely and securely**	-	-	-	-
127.	**PC18. identify common components of salary and compute income, expenses, taxes, investments etc**	-	-	-	-
128.	**PC19. identify relevant rights and laws and use legal aids to fight against legal exploitation**	-	-	-	-
129.	*Essential Digital Skills*	**3**	**4**	-	-
130.	**PC20. operate digital devices and carry out basic internet operations securely and safely**	-	-	-	-
131.	**PC21. use e- mail and social media platforms and virtual collaboration tools to work effectively**	-	-	-	-
132.	**PC22. use basic features of word processor, spreadsheets, and presentations**	-	-	-	-
133.	*Entrepreneurship*				
134.	**PC23. identify different types of Entrepreneurship and Enterprises and assess opportunities for potential business through research**	**2**	**3**	-	-
135.	**PC24. develop a business plan and a work model, considering the 4Ps of Marketing Product, Price, Place and Promotion**	-	-	-	-
136.	**PC25. identify sources of funding, anticipate, and mitigate any financial/ legal hurdles for the potential business opportunity**	-	-	-	-
137.	*Customer Service*	-	-	-	-
138.	**PC26. identify different types of customers**	-	-	-	-
139.	**PC27. identify and respond to customer requests and needs in a professional manner.**	-	-	-	-
140.	**PC28. follow appropriate hygiene and grooming standards**	-	-	-	-
141.	*Getting ready for apprenticeship & Jobs*	**2**	**3**	-	-
142.	**PC29. create a professional Curriculum vitae (Résumé)**	-	-	-	-
143.	**PC30. search for suitable jobs using reliable offline and online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals, respectively**	-	-	-	-
144.	**PC31. apply to identified job openings using offline/online methods as per requirement**	-	-	-	-
145.	**PC32. answer questions politely, with clarity and confidence, during recruitment and selection**	-	-	-	-
146.	**PC33. identify apprenticeship opportunities and register for it as per guidelines and requirements**	-	-	-	-

147.	**NOS Total**	**20**	**30**	-	-

Annexure: Assessment Strategy

Assessment Guidelines

1. Criteria for assessment for the Qualification Pack will be created by IASC.

2. Performance Criteria (PC) have been assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC.

3. The assessment for the theory part will/may be based on knowledge bank of questions approved IASC.

4. Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/option NOS/set of NOS.

5. Assessment Agencies will create Assessor Guides comprising of Theory and Practical Assessment Set and Guidelines for each examination/training centre (as per assessment criteria below). The same will be approved by IASC for adequacy.

6. To successfully attain Certification on the Qualification Pack, the trainee must score a minimum of 70% in each Core NOS and minimum of 70% in all non-core NOS. In addition, a candidate needs to attain a minimum overall pass percentage of 70% for certification.

7. In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack.

Annexure: Tools and Equipment

List of Tools and Equipment

Batch Size: 30 Candidate

S. No.	Tool / Equipment Name	Specification	Quantity for specified Batch size
1	CAD Software	As per requirement	As per requirement
2	3D scanner, 3D Printers, and their strategy-making software	As per requirement	As per requirement
3	measuring tools	As per requirement	As per requirement
4	sand blasting machine	As per requirement	As per requirement
5	Inert gas muffle furnace	As per requirement	As per requirement
6	Inert gas or nitrogen gas	As per requirement	As per requirement
7	safety equipment & tools	As per requirement	As per requirement
8	Laser Cutting Machine	As per requirement	As per requirement

Classroom Aids:

The aids required to conduct sessions in the classroom are:

1. Training Kit - Trainer Guide, Presentations, Whiteboard, Marker, Projector, Laptop, Video Films

Annexure: Industry Validations Summary

S. No	Organization Name	Representative Name	Designation	Contact Address	Contact Phone No	E-mail ID	LinkedIn Profile *(if available)*
1	Servilink	Pratik Patel	Business Development Manager	Servilink Systems Ltd,3rd Floor Concord Building, 201, RC Dutt Rd, opposite Alkapuri Petrol Pump, Aradhana Society, Alkapuri, Vadodara, Gujarat 390007, India	70690 49716	servitech.ssl@servilinksystems.com	
2	TANSAM	Sukhpreet Singh	CEO	Tamil nadu Smart and Advanced Manufacturing Centre, C block, Tidel	9779777057	sukhpreet@tansam.org	

(DCS Programmer and Troubleshooter)

				Par k, Taramani , Chennai			
3	TAC Automation	Asif Khan	VP- Sales & Operations	TAC Automation Pvt Ltd- A 20 Phase 2, Noida 201305	8373912163	asif@cloudgem.co.in	
4	IJIRA	Dr. Pradip Chakarvarti	HOD-HRD-IJIRA	17, Taratala Rd, CPT Colony, Taratala, Kolkata, West Bengal 700088	7003997232	pradip@ijira.org.in	
5	AKGEC Skill Foundation	Prof. SOM Ashutosh	GM	27th KM Milestone, Delhi - Meerut Expy, Ghaziabad, Uttar Pradesh 201015	7669094516	ashutoshsom@akgec.ac.in	

Annexure: Training Details

Training Projections:

Year	Estimated Training # of Total Candidates	Estimated training # of Women	Estimated training # of People with Disability
1	500	100	
2	600	150	
3	700	150	

Data to be provided year-wise for next 3 years.

Annexure: Blended Learning

Blended Learning Estimated Ratio & Recommended Tools:

Refer NCVET "Guidelines for Blended Learning for Vocational Education, Training & Skilling" available on:
https://ncvet.gov.in/sites/default/files/Guidelines%20for%20Blended%20Learning%20for%20Vocational%20Education,%20Training%20&%20Skilling.pdf

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

Annexure: Acronym and Glossary

Acronym

Acronym	Description
AA	Assessment Agency
AB	Awarding Body
ISCO	International Standard Classification of Occupations
NCO	National Classification of Occupations
NCrF	National Credit Framework
NQR	National Qualification Register
NSQF	National Skills Qualifications Framework
OJT	On the Job Training

Glossary

Term	Description
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 based on their main economic function, product, service or technology.