QUALIFICATION FILE

Industry 4.0

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

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

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

NCrF/NSQF Level: 4.5

Submitted By:

Automotive Skills Development Council

E-113, Okhla Industrial Estate

Phase- III,

New Delhi-110020

Table of Contents

Section 1: Basic Details

1.	**Qualification Name**	**Industry 4.0**	
2.	**Sector/s**	**Automotive**	
3.	**Type of Qualification: ☒ New ☐ Revised ☐ Has Electives/Options ☐OEM**	**NQR Code & version of existing/previous qualification:** *(change to previous, once approved)*	**Qualification Name of existing/previous version:**
4.	**a. OEM Name** **b. Qualification Name** (*Wherever applicable)*	**b. Industry 4.0**	
5.	**National Qualification Register (NQR) Code & Version** (*Will be issued after NSQC approval)*	QG-4.5-AU-01820-2024-V1-ASDC	**6. NCrF/NSQF Level: 4.5**
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**	The role of the Digital Production Systems Technician is to understand the business case for enhancement, and to design and implement technical responses accordingly. Assembled and commissioned hardware in virtual and real context using various digital tools and technology provide the basis for programming, and the design and implementation of cyber security measures on real and virtual production processes.	
9.	**Eligibility Criteria for Entry for Student/Trainee/Learner/Employee**	**a. Entry Qualification & Relevant Experience: No formal education required.** **b. Age: Below 25 Years of age.**	
10.	**Credits Assigned to this Qualification, Subject to Assessment** *(as per National Credit Framework (NCrF))*	14	**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)	90:00	90:00	330:00		510:00
Online					

(Refer Blended Learning Annexure for details)

14.	**Aligned to NCO/ISCO Code/s** *(if no code is available mention the same)*	NCO-2015/NIL	
15.	**Progression path after attaining the qualification** *(Please show Professional and Academic progression)*	Engineer Supervisor	
16.	**Other Indian languages in which the Qualification & Model Curriculum are being submitted**	NA	
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:**	
19.	**How Participation of Women will be Encouraged**	No gender sensitization	
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**	
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:** Mr. Arindam Lahiri **Email:** ceo@asdc.org.in **Contact No.:** 011-42599800 **Website:** https://www.asdc.org.in/	
23.	**Final Approval Date by NSQC: 06-02-2024**	**24. Validity Duration:** 2 Years	**25. Next Review Date: 06-02-2026**

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*

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.	Work organization and management	ASC/N9831	Non-core	4	1	6	6	18		30	15	25		10	50	5
2.	Communication and interpersonal skills	ASC/N9832	Non-core	4	1	6	6	18		30	15	25		10	50	5
3.	Design, assembly, and commissioning	ASC/N8373	Core	4	4	18	18	84		120	30	50		20	100	20
4.	Software design and implementation	ASC/N8374	Core	4	4	18	18	84		120	30	50		20	100	20
5.	Networking and cyber security	ASC/N8375	Core	4	3	18	18	54		90	30	50		20	100	20
6.	Testing, maintenance, and fault-finding	ASC/N8376	Core	4	2	12	12	36		60	15	25		10	50	15
7.	Enhancement and optimization	ASC/N8377	Core	4	1	6	6	18		30	15	25		10	50	10
8.	Analysis, evaluation, and reporting	ASC/N8378	Core	4	1	6	6	18		30	15	25		10	50	5
Duration (in Hours) / Total Marks					**17**	**90**	**90**	**330**	**0**	**510**	**165**	**275**	**0**	**110**	**550**	**100**

Elective NOS/s:

S. No	NOS/Module Name	NOS/Module Code & Version *(if applicable)*	Core/ Non-Core	NCrF/NSQF Level	Credits as per NCrF	Training Duration (Hours)					Assessment Marks					
						Th.	Pr.	OJT - Man.	OJT - Rec.	Total	Th.	Pr.	Proj.	Viva	Total	Weightage (%) *(if applicable)*
1.																
2.																
Duration (in Hours) / Total Marks																

Optional NOS/s:

S. No	NOS/Module Name	NOS/Module Code & Version *(if applicable)*	Core/ Non-Core	NCrF/NSQF Level	Credits as per NCrF	Training Duration (Hours)					Assessment Marks					
						Th.	Pr.	OJT - Man.	OJT - Rec.	Total	Th.	Pr.	Proj.	Viva	Total	Weightage (%) *(if applicable)*
1.																
2.																
Duration (in Hours) / Total Marks																

Assessment - Minimum Qualifying Percentage

*Please specify **any one** of the following:*

Minimum Pass Percentage – Aggregate at qualification level: 70 % *(Every Trainee should score specified minimum aggregate passing percentage at qualification level to successfully clear the assessment.)*

Minimum Pass Percentage – NOS/Module-wise: ____% *(Every Trainee should score specified minimum passing percentage in each mandatory and selected elective NOS/Module to successfully clear the assessment.)*

Section 3: Training Related

1.	**Trainer's Qualification and experience in the relevant sector (in years)** *(as per NCVET guidelines)*	B.E/B.Tech (Mechanical/Automobile/ Electrical/ Electronics) with 4 years of industry and 1 year of training experience in Mechanical/ Automobile/ Electronics/ Instrumentation Or B.E/B.Tech (Mechanical/Automobile/ Electrical/ Electronics) with 5 years of industry experience in Mechanical/ Automobile/ Electronics/ Instrumentation

		Or Diploma (Mechanical/Automobile/ Electrical/ Electronics) with 3 years of industry and 1 year of training experience in Mechanical/ Automobile/ Electronics/ Instrumentation Or Diploma (Mechanical/Automobile/ Electrical/ Electronics) with 4 years of industry experience in Mechanical/ Automobile/ Electronics/ Instrumentation Or M.E/M.Tech (Mechanical/Automobile/ Electrical/ Electronics) with 2 years of industry and 1 year of training experience in Mechanical/ Automobile/ Electronics/ Instrumentation Or M.E/M.Tech (Mechanical/Automobile/ Electrical/ Electronics) with 3 years of industry experience in Mechanical/ Automobile/ Electronics/ Instrumentation
2.	**Master Trainer's Qualification and experience in the relevant sector (in years)** *(as per NCVET guidelines)*	M.E/M.Tech (Mechanical/Automobile/ Electrical/ Electronics) with 4 years of industry and 1 year of training experience in Mechanical/ Automobile/ Electronics/ Instrumentation
3.	**Tools and Equipment Required for Training**	☒Yes ☐No (*If "Yes", details to be provided in Annexure)*
4.	**In Case of Revised Qualification, Details of Any Upskilling Required for Trainer**	

Section 4: Assessment Related

1.	**Assessor's Qualification and experience in relevant sector (in years)** *(as per NCVET guidelines)*	Any Recognized certification with proven industrial and/or practical experience in the relevant skill (minimum 10 years). OR Have worked as a Jury member/expert in skill competitions and other competitions of similar nature at regional/national levels OR Trained/mentored competitors for IndiaSkills/ WorldSkills competitions (national/ international). **OR** As any change per NCVET guidelines.
2.	**Proctor's Qualification and experience in relevant sector (in years)** *(as per NCVET guidelines)*	As per IndiaSkills/ WorldSkills guidelines
3.	**Lead Assessor's/Proctor's Qualification and experience in relevant sector (in years)** *(as per NCVET guidelines)*	As per IndiaSkills/ WorldSkills guidelines

4.	**Assessment Mode** *(Specify the assessment mode)*	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 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
2.	**Latest Market Research Reports or any other source (not older than 2 years) (Yes/No):** Yes
3.	**Government /Industry initiatives/ requirement (Yes/No):** Yes
4.	**Number of Industry validation provided:**
5.	**Estimated nos. of persons to be trained and employed:** 500
6.	**Evidence of Concurrence/Consultation with Line Ministry/State Departments:** In progress 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)*	*Attached*
2.	**Annexure:** List of tools and equipment relevant for qualification *(Mandatory, except in case of online course)*	*Attached*
3.	**Annexure:** Detailed Assessment Criteria *(Mandatory)*	*Attached*
4.	**Annexure:** Assessment Strategy *(Mandatory)*	*Attached*
5.	**Annexure:** Blended Learning *(Mandatory, in case selected Mode of delivery is "Blended Learning")*	*Filled*
6.	**Annexure:** Multiple Entry-Exit Details *(Mandatory, in case qualification has multiple Entry-Exit)*	*Filled*
7.	**Annexure:** Acronym and Glossary *(Optional)*	
8.	**Supporting Document:** Model Curriculum *(Mandatory – Public view)*	Attached

9.	**Supporting Document:** Career Progression *(Mandatory - Public view)*	Attached
10.	**Supporting Document:** Occupational Map *(Mandatory)*	Attached
11.	**Supporting Document:** Assessment SOP *(Mandatory)*	Attached
12.	**Any other document you wish to submit:**	

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	The individual on the job needs to manage installation, interfacing and programming of ICT system in Automotive manufacturing.	The individual on the job is responsible for own work and learning and in ICT environment.	4.5
Professional and Technical Skills/ Expertise/ Professional Knowledge	The individual on the job needs to have factual knowledge of: ● Different types of ICT systems ● Different types of tools used in the automation and robotic process and their identification. ● Basic fundamentals of ICT system networking. ● Prepare and design project plan sand design ● Implement strategies for integration and installation of ICT system network in the system.	Factual knowledge of ICT networking and use of different tools and equipment.	4.5
Employment Readiness & Entrepreneurship Skills & Mind-set/Professional Skill	Recall and demonstrate practical skill to routine and repetitive applications: ● Implementation of ICT networking system. ● Inspection of ICT system operation. ● Recognise a workplace problem or a potential problem and take action.	Recall and demonstrate practical skill, routine and repetitive in wide range of application, using appropriate rule and tool, using quality concepts.	4.5
Broad Learning Outcomes/Core Skill	The user individual on the job needs to have written and oral communication skills like:	Language to communicate written or oral, with required clarity, skill to basic arithmetic	4.5

	• To prepare plans and designs. • Read and interpret designs and schedules. • Read machine drawings/ engineering drawings, sketches.	and algebraic principles, basic understanding of social political and natural environment.	
Responsibility	• The individual on the job needs to know their own responsibility of strategize and integrate the ICT system within an organization.	The individual on the job is responsible for own work and fully responsible for other's work and learning.	4.5

Annexure: Tools and Equipment (Lab Set-Up)

List of Tools and Equipment
Batch Size: 30

S. No.	Tool / Equipment Name	Specification	Quantity for specified Batch size
1	Connecting screwdriver	10 X 100 mm	10
2	Neon tester 500 V.	500 V	6
3	Screw driver set	Set of 7	10
4	Insulated combination pliers	150 mm	6
5	Insulated side cutting pliers	150mm	8
6	Long nose pliers	150mm	6
7	Soldering iron	25 Watt, 240 Volt	10
8	Electrician knife	100 mm	6
9	Tweezers	150 mm	10
10	Digital Multimeter	(3 3/4 digit) ,4000 Counts	10
11	Soldering Iron Changeable bits	15 Watt, 240 Volt	6
12	De- soldering pump electrical	230 V, 40 W	10
13	Steel rule graduated both in Metric and English Unit	300 mm,	4
14	Precision set of screw drivers	T5, T6, T7	2
15	Tweezers – Bend tip		2
16	Steel measuring tape	3 meter	4
17	Tools makers vice	100 mm (clamp)	1
18	Crimping tool (pliers)		4
19	File set		4
20	Allen key set (Hexagonal -set of 9)	1 - 12 mm, set of 24 Keys	1
21	Multiple Output DC regulated power supply	0-30V, 2 Amps, ± 15V Dual Tracking ,5V/5A, Display digital, Load & Line Regulation:	4
22	DC Regulated Variable Programmable DC Power Supply	± (0.05 %+100 mV), Ripple & Noise: 1 mVrms. Constant	2

23	LCR meter (Digital) Handheld	Voltage & Current operation	1
24	Analyzer	3GHz	1
25	Digital IC Trainer	Breadboard: Regular DC Supply: +5 V/1 A +12V/1A Clock Frequency 4 different steps from 1Hz – 100KHz Amplitude: (TTL), 128x64 Graphical LCD, Pulser Switches, Data Switches: 8 Nos, LED: 8 Nos. (TTL),Seven Segment Display, Teaching & Learning Simulation Software\	1
26	IT Workbench for computer hardware and networking		1
27	Electronic circuit simulation software	Circuit Design and Simulation Software with PCB Design with Gerber and G Code Generation, 3D View of PCB, Breadboard View, Fault Creation and Simulation.	5
28	Different types of electronic and electrical cables, connectors, sockets, terminations	Standard	As required
29	Different types of Analog electronic components, digital ICs, power electronic components, general purpose PCBs	Standard	As required
30	SMD Soldering & De soldering Station with necessary accessories	SMD Soldering &Desoldering Station Digitally Calibrated Temperature Control SMD Soldering &Desoldering Power Consumption : 60 Watts I/P Voltage : 170 to 270 V De-soldering : 70 Watt Temperature Range : 180 to 480º Centigrade Power Consumption : 270 Watts Hot Air Temperature : 200 to 550º Centigrade	1
31	SMD Technology Kit	SMD component identification board with SMD components Resistors, Capacitors, Inductors, Diodes, Transistors & IC's packages. Proto boards with readymade solder pads for various SMD components	1
32	Microcontroller kits (8051) along with programming software	Core 8051 MCU clocked at 11.0592 MHz., supporting both programming modes Keypad and computer, LCD for both programming and run mode, ready to run programmer to support family of controllers AT89C52 ,DC Power Supplies +12V, -12V, +5V & -5V, Breadboard to make circuits, Learning content through simulation Software and following application modules	1
33	Sensor Trainer Kit Containing required Sensors	IoT enabled Android based 7" Graphical touch LCD with inbuilt cortex processor & DAQ for acquiring analog data and software for viewing the output waveforms with USB storage and HDMI output. Ethernet port to connect real world. Inverting, Non –	2

		Inverting, Power, Current, Instrumentation and Differential Amplifier, F to V, V to F, I to V, V to I Converter, High Pass and Low Pass Filter, Buffer, LED, Buzzer, LED Bar Graph, Touch Switch	
34	Internet of Things Explorer	Processor: 64bit ARMv7 with 1GB RAM , Memory 32GB ,OS: Open source Linux, Connectivity: Wireless LAN, Bluetooth, Zigbee, USB & Ethernet, HDMI interface, 1.77" Color TFT LCD	1
35	Wireless Communication modules for interfacing with microcontrollers	Standard	1
36	Power Backup	Standard	1
37	Measuring tools	Standard	10
38	Drawing tools	Standard	10
39	Automotive System Hardware	Standard	1
40	Robot assembly	Standard	1
41	Motherboards Test rig	Standard	10
42	Volt Meters	Standard	10
43	Ammeter	Standard	10
44	Multimeter	Standard	10
45	Wirings	Standard	8
46	SCADA	Standard	10
47	PLC Simulator with required software	Standard	5
48	Delmia/ RoboCAD	Standard	10
49	Electronics & Electronic Elements	Standard	10
50	Hydraulics and pneumatics systems simulator	Standard	5
51	Connector/tubing simulators	Standard	5
52	Any other as per requirement of World Skills Occupation Standard	Standard	Standard

Classroom Aids

The aids required to conduct sessions in the classroom are:

1. Whiteboard
2. Projector
3. Computer/Laptop
4. Chairs
5. Tables
6. Whiteboard marker

Annexure: Industry Validations Summary

Provide the summary information of all the industry validations in table. This is not required for OEM qualifications.

S. No	Organization Name	Representative Name	Designation	Contact Address	Contact Phone No	E-mail ID	LinkedIn Profile *(if available)*
1							
2							
3							
4							
5							
6							
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20							
21							

Annexure: Training & Employment Details

Training and Employment Projections:

Year	Total Candidates		Women		People with Disability	
	Estimated Training #	Estimated Employment Opportunities	Estimated Training #	Estimated Employment Opportunities	Estimated Training #	Estimated Employment Opportunities
2023-24	500	350	200	140	50	35
2024-25	1000	700	400	280	100	70
2025-26	1500	1050	600	420	150	105

Data to be provided year-wise for next 3 years

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

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

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

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

1.
2.

Content availability for previous versions of qualifications:

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

Languages in which Content is available:

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	• Books/ e-books • Presentations • Reference Material • Audio / Video Modules	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 • AR/ VR/ XR	100:0
4	☒Imparting Practical Hands-on Skills/ Lab Work/ workshop/ shop floor training	• Training tools (tools list attached) • Video Play • Presentations	100:0
5	☒Tutorials/ Assignments/ Drill/ Practice	• Online Question Bank • Mobile Quick test app • MCQ based tests	100:0
6	☒Proctored Monitoring/ Assessment/ Evaluation/ Examinations	• Assessment engine for Essays • Up-loadable file examinations • Mock test sessions	100:0
7	☒On the Job Training (OJT)/ Project Work Internship/ Apprenticeship Training	• Online tests • Offline assessments	100:0

Annexure: 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
Work organization and management	PC1. Set up and maintain a safe, clean and efficient work area	2	3	-	1
	PC2. Maintain an appropriate state of preparation and readiness to receive, schedule and act on requests and assignments efficiently, effectively and safely	2	3	-	1
	PC3. Order, select, use and care for all equipment, facilities and materials in accordance with manufacturers' instructions and accepted good practice	2	4	-	2
	PC4. Conduct self and all operations with care and consideration for other personnel, cost efficiency and the environment	2	4	-	2
	PC5. Monitor progress, modifying or changing plans or approaches through a rational process, within their personal authority	2	3	-	1
	PC6. Complete assignments or tasks, and restore the work area to its state of readiness for future use	3	5	-	2
	PC7. Reflect on and review their personal performance, as part of continuing professional development.	2	3	-	1
	Total Marks	**15**	**25**	**-**	**10**
Communication and interpersonal skills	PC1. Receive assignments, identify their salient points, and ask questions for clarification and confirmation	2	3	-	1
	PC2. Read, interpret and extract technical data and instructions from given documentation in all available formats	2	3	-	1
	PC3. Discuss and plan with relevant others the complex, joint and overlapping elements of assignments	2	4	-	2
	PC4. Communicate verbally, in writing, and electronically, using methods that ensure clarity, efficiency and effectiveness	2	4	-	2
	PC5. Make and retain reports on progress, issues and actions, in the required formats	2	3	-	1
	PC6. Give and take feedback and support to and from others	3	5	-	2
	PC7. Review the team's performance, one's own con4tribution, and individual and collective learning points.	2	3	-	1
	Total Marks	**15**	**25**	**-**	**10**

Design, assembly, and commissioning	PC1. Read and interpret instructions, using questioning techniques and research to check, verify and prepare	3	5	-	2
	PC2. Design systems for the automation and communication of production modules, with the given parameters for cyber-physical systems	3	5	-	2
	PC3. Test and implement design solutions	3	5	-	2
	PC4. Assemble machines and equipment	3	5	-	2
	PC5. Select and apply sensors, communication technologies, and devices for motion control, position sensing, pressure testing and electronic communication	3	5	-	2
	PC6. Test the performance of electrical, electronic, mechanical and integrated systems and equipment, relative to their intended purpose	3	5	-	2
	PC7. Apply mechatronic or automated solutions to the transfer of materials, components or finished goods	3	5	-	2
	PC8. Integrate the equipment and sub-systems to ensure readiness for data capture, networking, exchange and use	3	5	-	2
	PC9. Commission the system	3	5	-	2
	PC10. Create and maintain project files	3	5	-	2
	Total Marks	**30**	**50**	**-**	**20**
Software design and implementation	PC1. Write, analyse, review, and rewrite programs	3	5	-	2
	PC2. Correct errors by making appropriate changes and rechecking that the desired results are produced	3	5	-	2
	PC3. Perform or direct revision, repair, or expansion of existing programs to increase operating efficiency or adapt to new requirements	3	5	-	2
	PC4. Write, update, and maintain computer programs or software packages to handle specific jobs such as tracking inventory, storing or retrieving data, or controlling other equipment	3	5	-	2
	PC5. Conduct trial runs of programs and software applications to ensure they produce the desired information and the instructions are correct	3	5	-	2
	PC6. Prepare detailed workflow charts and diagrams that describe input, output, and logical operation, and convert them into a series of instructions coded in a computer language	3	5	-	2
	PC7. Compile and write documentation of program development and subsequent revisions, using protocols to ensure that others can understand the programs	3	5	-	2
	PC8. Consult with others to define and resolve problems in running programs	2	3	-	2
	PC9. Perform systems analysis and programming moduless to maintain and control the use of computer systems software.	3	5	-	2

	PC10. Write or contribute to instructions or manuals to guide end users	2	3	-	1
	PC11. Investigate whether networks, workstations, the central processing unit of the system, or peripheral equipment are responding to a program's instructions	2	4		1
	Total Marks	**30**	**50**	**-**	**20**
Networking and cyber security	PC1. Design and implement network protocols and topologies	3	5	-	2
	PC2. Develop plans to safeguard computer files against accidental or unauthorized modification, destruction, or disclosure, and meet emergency data processing needs	3	5	-	2
	PC3. Maintain levels of preparedness and the availability of preventative and defensive tools commensurate with risks and trends in malicious attacks	3	5	-	2
	PC4. Monitor reports of computer viruses to determine when to update virus protection systems	3	5	-	2
	PC5. Encrypt data transmissions and erect firewalls to conceal confidential information during transmitted, and to keep out tainted digital transfers	3	5	-	2
	PC6. Perform risk assessments and conduct tests of data processing systems to ensure safe functioning of data processing and security measures	3	5	-	2
	PC7. Modify computer security files to incorporate new software, correct errors, or change individual access status	3	5	-	1
	PC8. Monitor the use of data files and regulate access to safeguard information	2	3	-	2
	PC9. Review violations of procedures and take steps to prevent their repeating	2	3	-	1
	PC10. Document computer security and emergency measures, policies, procedures and tests	1	2	-	1
	PC11. Test and simulate disaster recovery plans	3	5	-	2
	PC12. Train users and promote security awareness to ensure system security and improve server and network efficiency	1	2	-	1
	Total Marks	**30**	**50**	**-**	**20**
Testing, maintenance, and fault-finding	PC1. Identify the parts of the production system to which to apply smart maintenance	2	3	-	1
	PC2. Establish the parameters for the parts' operation	2	3	-	1
	PC3. Use the access tools at the appropriate data points, or on a mobile basis	2	4	-	2
	PC4. Monitor the condition of each part, using augmented reality or other tools as helpful	2	4	-	2
	PC5. Discuss and check findings with relevant personnel	2	3	-	1
	PC6. Undertake preventive or predictive maintenance by reviewing alternative courses of action and scheduling or recommending the optimal measure(s)	3	5	-	2

	PC7. Use the available technology and measures to effect maintenance with least disruption to production	2	3	-	1
	Total Marks	**15**	**25**	**-**	**10**
Enhancement and optimization	PC1. Reduce costs by removing waste ad consumption caused by: Over-production, Stock and storage, Over- and unnecessary processing, Poor quality, Transport and movement, Waiting time	3	6	-	2
	PC2. Analyse and recommend opportunities for optimization using: Simulations, Prototyping, Digital shadows/twins	4	7	-	3
	PC3. Identify opportunities for: Greater lateral and vertical integration, The use of the Cloud	4	6	-	2
	PC4. Identify the cost-benefit implications, financial and human, oF optimization	4	6	-	3
	Total Marks	**15**	**25**	**-**	**10**
Analysis, evaluation, and reporting	PC1. Take account of requirements for monitoring, review and evaluation in the design of the system and sub-systems	2	3	-	1
	PC2. Optimize the use of self-monitoring equipment and tools to the extent feasible	2	3	-	1
	PC3. Design and apply an appropriate model for monitoring and evaluating performance relative to specification	2	4	-	2
	PC4. Anticipate requests for feedback and reports, and prepare accordingly on a data rational basis	2	4	-	2
	PC5. Prepare reports in appropriate formats for routine and exception reporting	2	3	-	1
	PC6. Make presentations customized to particular groups and individuals	3	5	-	2
	PC7. Maintain awareness of new possibilities and options for improvement, making recommendations on the basis of return on investment	2	3	-	1
	Total Marks	**15**	**25**	**-**	**10**
Grand Total		**165**	**275**	**-**	**110**

Annexure: Assessment Strategy

This section includes the processes involved in identifying, gathering, and interpreting information to evaluate the Candidate on the required competencies of the program.
Mention the detailed assessment strategy in the provided template.

1. Assessment System Overview:
   - Batches assigned to the assessment agencies for conducting the assessment on SDMS/SIP or email
   - Assessment agencies send the assessment confirmation to VTP/TC looping SSC
   - Assessment agency deploys the ToA certified Assessor for executing the assessment
   - SSC monitors the assessment process & records

2. Testing Environment:
   - Confirm that the centre is available at the same address as mentioned on SDMS or SIP
   - Check the duration of the training.
   - Check the Assessment Start and End time to be as 10 a.m. and 5 p.m.
   - If the batch size is more than 30, then there should be 2 Assessors.
   - Check that the allotted time to the candidates to complete Theory & Practical Assessment is correct.
   - Check the mode of assessment—Online (TAB/Computer) or Offline (OMR/PP).
   - Confirm the number of TABs on the ground are correct to execute the Assessment smoothly.
   - Check the availability of the Lab Equipment for the particular Job Role.

3. Assessment Quality Assurance levels / Framework:
   - Question papers created by the Subject Matter Experts (SME)
   - Question papers created by the SME verified by the other subject Matter Experts
   - Questions are mapped with NOS and PC
   - Question papers are prepared considering that level 1 to 3 are for the unskilled & semi-skilled individuals, and level 4 and above are for the skilled, supervisor & higher management
   - Assessor must be ToA certified & trainer must be ToT Certified
   - Assessment agency must follow the assessment guidelines to conduct the assessment

4. Types of evidence or evidence-gathering protocol:
   - Time-stamped & geotagged reporting of the assessor from assessment location
   - Centre photographs with signboards and scheme specific branding
   - Biometric or manual attendance sheet (stamped by TP) of the trainees during the training period
   - Time-stamped & geotagged assessment (Theory + Viva + Practical) photographs & videos

5. Method of verification or validation:
   - Surprise visit to the assessment location
   - Random audit of the batch
   - Random audit of any candidate

6. Method for assessment documentation, archiving, and access
   - Hard copies of the documents are stored
   - Soft copies of the documents & photographs of the assessment are uploaded / accessed from Cloud Storage

- Soft copies of the documents & photographs of the assessment are stored in the Hard Drives

Annexure: Acronym and Glossary

Acronym

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

Glossary

Term	Description
National Occupational Standards (NOS)	NOS define the measurable performance outcomes required from an individual engaged in a particular task. They list down what an individual performing that task should know and also do.
Qualification	A formal outcome of an assessment and validation process which is obtained when a competent body determines that an individual has achieved learning outcomes to given standards
Qualification File	A Qualification File is a template designed to capture necessary information of a Qualification from the perspective of NSQF compliance. The Qualification File will be normally submitted by the awarding body for the qualification.
Sector	A grouping of professional activities on the basis of their main economic function, product, service or technology.
Long Term Training	Long-term skilling means any vocational training program undertaken for a year and above. https://ncvet.gov.in/sites/default/files/NCVET.pdf