QUALIFICATION FILE–Standalone NOS

Basics of Embedded Communication Protocols

☐ **Horizontal/Generic** ☐**Vertical/Specialization**

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

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

NCrF/NSQF Level: 5

Submitted By:

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Section 1: Basic Details

1.	**NOS-Qualification Name**	**Basics of Embedded Communication Protocols**	
2.	**Sector/s**	Electronics	
3.	**Type of Qualification** ☒ **New** ☐ **Revised**	**NQR Code & version of the existing /previous qualification: NA**	**Qualification Name of the existing/previous version: NA**
4.	**National Qualification Register (NQR) Code & Version**	NG-05-EH-02891-2024-V1-NIELIT	**5. NCrF/NSQF Level:** 5
6.	**Brief Description of the Standalone NOS**	This course provides an in-depth exploration of embedded systems and communication protocols, covering fundamentals and hands-on implementation of UART, SPI, I2C, CAN, USB, and Ethernet communication. Students will learn about the principles, configurations, and practical interfacing of these communication methods, enhancing their skills in developing robust and efficient embedded systems. Emphasis is placed on understanding data communication basics and integrating various communication standards in real-world applications.	

7.	**Eligibility Criteria for Entry for a Student/Trainee/Learner/Employee**	a. **Entry Qualification & Relevant Experience:**	

S. No.	Academic/Skill Qualification (with Specialization - if applicable)	Relevant Experience (with Specialization - if applicable)
1	2nd year of UG in Electronics and Communication Engineering/ Electrical Engineering/CS/IT/Physics/Electronics and allied branches	NA
2	3 Years of Diploma in Electronics and Communication Engineering/ Electrical Engineering/CS/IT/Physics/Electronics and allied branches after class 10th	1.5 Years
3	2 Year of diploma in Electronics and Communication Engineering/ Electrical Engineering/CS/IT/Physics/Electronics and allied branches after class 12th	NA
4	NSQF Level 4.5 in Electronics and Communication Engineering/ Electrical Engineering/CS/IT/Physics/Electronics and allied branches	1.5 Years

		5	NSQF Level 4 Electronics and Communication Engineering/ Electrical Engineering/CS/IT/Physics/Electronics and allied branches	1.5 Years
		b. Age:18 years		

8.	**Credits Assigned to this NOS-Qualification, Subject to Assessment** *(as per National Credit Framework (NCrF))*	2 Credits	9.	**Common Cost Norm Category (I/II/III)** *(wherever applicable)*: Category I (Electronics System Design)

10.	**Any Licensing Requirements for Undertaking Training on This Qualification** *(wherever applicable)*	NA

11.	**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 Mode	Theory (Hours)	Practical (Hours)	Total (Hours)
Classroom (offline)	30	30	60

Training shall be conducted in any of the 3 modes depending on the regional need.

(Refer Blended Learning Annexure-V for details)

12.	**Assessment Criteria**

Theory (Marks)	Practical (Marks)	Project/ Presentation /Assignment (Marks)	Viva/ Internal Assessment (Marks)	Total (Marks)	Passing %age
100	60	20	20	200	50

The centralized online assessment is conducted by the Examination Wing, NIELIT Headquarters.

13.	**Is the NOS Amenable to Persons with Disability**	☒ **Yes** ☐ **No** **If "Yes", specify applicable type of Disability:** a. Locomotor Disability: Leprosy Cured Person, Dwarfism, Muscular Dystrophy and Acid Attack Victims b. Visual Impairment: Low Vision
14.	**Progression Path After Attaining the Qualification, wherever applicable**	Embedded Software Engineer

15.	**How will the participation of women be encouraged?**	Participation by women can be ensured through Government Schemes. Occasionally, exclusive batches for women would be run for the proposed courses. Funding is available for women's participation under other schemes launched by the Government from time to time.	
16.	**Other Indian languages in which the Qualification & Model Curriculum are being submitted**	Qualification file available in English & Hindi Language.	
17.	**Is similar NOS available on NQR-if yes, justification for this qualification**	☐Yes ☒ No	
18.	**Name and Contact Details Submitting / Awarding Body SPOC** *(In the case of CS or MS, provide details of both Lead AB & Supporting ABs)*	**Name:** Rajesh M **Email:** rajesh.m@nielit.gov.in **Website:** https://nielit.gov.in/ **Name:** Anirban Jyoti Hati **Email:** anirban@nielit.gov.in **Website:** https://nielit.gov.in/ **Name:** Ankit Kumar **Email:** ankit@nielit.gov.in **Website:** https://nielit.gov.in/	
19.	**Final Approval Date by NSQC: 25.07.2024**	**20. Validity Duration: 3 years**	**21. Next Review Date:25.07.2027**

Section 2: Training Related

1.	**Trainer's Qualification and experience in the relevant sector (in years) (as per NCVET guidelines)**	B.E./B. Tech in Electronics/ Electronics & Communication/ Electrical/ Electrical and Electronics/Instrumentation/ Electronics & Instrumentation / Instrumentation & Control /Computer Science/Information Technology Minimum 2 year of experience in the field of Embedded Systems Development
2.	**Master Trainer's Qualification and experience in the relevant sector (in years) (as per NCVET guidelines)**	B.E./B. Tech in Electronics/ Electronics & Communication/ Electrical/ Electrical and Electronics/Instrumentation/ Electronics & Instrumentation / Instrumentation & Control /Computer Science/Information Technology Minimum 3 year of experience in the field of Embedded Real Time systems
3.	**Tools and Equipment Required for the Training**	☒ Yes ☐No Available at Annexure-II
4.	**In Case of Revised NOS, details of Any Upskilling Required for Trainer**	Not Applicable

Section 3: Assessment Related

1.	**Assessor's Qualification and experience in relevant sector (in years)** *(as per NCVET guidelines)*	B.Tech or Equivalent as per NCrF + 3 years relevant experience
2.	**Proctor's Qualification and experience in relevant sector (in years)** *(as per NCVET guidelines), (wherever applicable)*	The assessor carries out theory online assessments through the remote proctoring methodology. Theory examination would be conducted online and the paper comprises MCQ. Conduct of assessment is through trained proctors. Once the test begins, remote proctors have full access to the candidate's video feeds and computer screens. Proctors authenticate the candidate based on registration details, pre-test image captured and I-card in possession of the candidate. Proctors can chat with candidates or give warnings to candidates. Proctors can also take screenshots, terminate a specific user's test session, or re-authenticate candidates based on video feeds.
3.	**Lead Assessor's/Proctor's Qualification and experience in relevant sector (in years)** *(as per NCVET guidelines)*	External Examiners/ Observers (Subject matter experts) are deployed including NIELIT scientific officers who are subject experts for evaluation of Practical examination/ internal assessment / Project/ Presentation/ assignment and Major Project (if applicable). Qualification is generally B.Tech
4.	**Assessment Mode***(Specify the assessment mode)*	Centralized online examination will be conducted
5.	**Tools and Equipment Required for Assessment**	Same as for training ☒ Yes ☐ No

Section 4: Evidence of the Need for the Standalone NOS

1.	Government /Industry initiatives/ requirement (Yes/No): Yes, Available at Annexure-A: Evidence of Need
2.	Number of Industry validations provided: 8
3.	Estimated number of people to be trained: 500 persons per year shall be trained.
4.	Evidence of Concurrence/Consultation with Line/State Departments (In case of regulated sectors): NIELIT is recognized as AB and AA under Government Category. NIELIT is an HRD arm of MeitY, therefore, the Line Ministry Concurrence is not required.
5.	Latest Skill Gap Study (not older than 2 years) (Yes/No): Yes, Available in Annexure-A: Evidence of Need
6.	Latest Market Research Reports or any other source (not older than 2 years) (Yes/No): Yes, Available at Annexure-A: Evidence of Need

Section 5: Annexure & Supporting Documents Check List

Specify Annexure Name / Supporting document file name.

1.	**Annexure:** NCrF/NSQF level justification based on NCrF/NSQF descriptors *(Mandatory)*	*Available at* Annexure-I: Evidence of Level
2.	**Annexure:** List of tools and equipment relevant for NOS *(Mandatory, except in case of online course)*	*Available at* Annexure-II: Tools and Equipment
3.	**Annexure: Industry Validation**	*Available at* Annexure-III: Industry Validation
4.	**Annexure: Training Details**	*Available at* Annexure-IV: Training Details
5.	**Annexure:** Blended Learning *(Mandatory, in case the selected Mode of delivery is Blended Learning)*	*Available at* Annexure-V: Blended Learning
6.	**Annexure/Supporting Document:** Standalone NOS-Performance Criteria Details Annexure/Document with PC-wise detailing as per NOS format (Mandatory- Public view)	*Available at* Annexure-VI: Standalone NOS- Performance Criteria details
7.	**Annexure:** Performance and Assessment Criteria *(Mandatory)*	*Available at* Annexure-VII: Detailed Assessment Criteria
8.	**Annexure:** Assessment Strategy *(Mandatory)*	*Available at* Annexure-VIII: Assessment Strategy
9.	**Annexure:** Acronym and Glossary *(Optional)*	*Available at* Annexure-IX: Acronym and Glossary
10.	**Supporting Document:** Model Curriculum	*Available at* Annexure-C: Model Curriculum

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	• Familiarity with the specifications, configurations, and standards of each protocol to ensure proper implementation and compliance. • Proficiency in configuring communication interfaces, including setting baud rates, addressing modes, and data formats for protocols like UART, SPI, and I2C. • Explored how to apply communication protocols in	• Understanding Specifications and Standards: This relates to theoretical knowledge by requiring familiarity with technical specifications, industry standards, and protocol configurations, which are foundational aspects taught	5

	real-world embedded system applications, such as automotive, industrial, and consumer electronics.	theoretically. • Configuration Proficiency: The ability to configure communication interfaces according to specifications involves applying theoretical knowledge of data formats, addressing modes, and protocol parameters learned in the classroom.	
Professional and Technical Skills/ Expertise/ Professional Knowledge	• Expertise in programming and interfacing these communication protocols with embedded systems. • Familiarity with USB communication standards, device classes, and configurations, and proficiency in implementing USB connectivity in embedded systems. • Ability to integrate various communication interfaces (UART, SPI, I2C, CAN, USB, Ethernet) into embedded systems for seamless operation.	• This requirement demonstrates technical skills in programming and interfacing communication protocols, showcasing hands-on expertise in implementing these protocols effectively. • Familiarity with USB standards, configurations, and device classes indicates technical expertise in USB communication, essential for integrating USB connectivity into embedded systems.	5
Employment Readiness & Entrepreneurship Skills & Mind-set/Professional Skill	• Develop a solid understanding of embedded systems and communication protocols like UART, SPI, I2C, CAN, USB, and Ethernet, enabling effective troubleshooting, configuration, and implementation in real-world applications. • Problem-Solving Capability: Acquire problem-solving skills essential for resolving hardware and software issues related to Embedded systems communication, ensuring smooth operation and reliability in diverse environments. • Innovation and Adaptability: Foster an innovative mindset and the ability to adapt communication protocols to varying project requirements, preparing for dynamic roles in employment and entrepreneurship within the embedded systems domain.	1. This skillset prepares individuals for employment by providing a solid foundation in embedded systems and communication protocols, crucial for roles in system design, development, and maintenance. 2. Acquiring problem-solving skills enhances employability by enabling individuals to troubleshoot hardware and software issues efficiently, ensuring smooth operation and reliability in real-world applications.	5

Broad Learning Outcomes/ Core Skill	• Mastery in configuring and implementing various communication protocols such as UART, SPI, I2C, CAN, USB, and Ethernet in embedded systems. • Ability to understand and work with the technical specifications, configurations, and standards of each communication protocol. • Competence in designing and developing embedded systems with comprehensive communication capabilities, considering factors like data transfer rates, reliability, and scalability.	1. Technical Mastery: Mastery in configuring and implementing communication protocols like UART, SPI, I2C, CAN, USB, and Ethernet is a core skill required for designing efficient and functional embedded systems. 2. Technical Understanding: The ability to understand and work with the technical specifications, configurations, and standards of each protocol demonstrates a strong foundation in technical knowledge, crucial for effective problem-solving and innovation.	5
Responsibility	• Responsibility for to integrate various communication protocols (UART, SPI, I2C, CAN, USB, Ethernet) into embedded systems, ensuring seamless data exchange and functionality across interconnected devices. • Proficiency in configuring communication settings and protocols according to system requirements, including baud rates, data formats, addressing schemes, and protocol optimizations.	1. Takes complete responsibility for delivery and quality of own work and output as also the subordinates. 2. Shares responsibility for the group tasks.	5

Annexure II: 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	Classroom	1 (750 Sq. ft to 1000 Sq. ft.)	30
2	Students Chair	30	30
3	Students Table	15 (2 students sharing 1 table)	15
4	Desktop computer with accessories / Laptop	Laptop with minimum specifications: Intel I3 or Celeron processor with at least 8GB RAM, 512GB SSD Hard disk integrated with	15

		graphics card, Display size 15.6-inch, Wi-Fi connectivity and Wired Optical Mouse	
5	Internet Connectivity	Seamless internet connectivity with at least 100 Mbps without firewall	
6	Development Board	Embedded development board with UART, SPI, I2C, CAN, USB, and Ethernet interfaces, relevant communication protocol libraries, and documentation.	15

Classroom Aids for offline and blended mode of training:

The aids required to conduct sessions in the classroom are:

1. LCD Projector/Smart Board

Annexure III: Industry Validations/ Government Recognition Summary

S. No	Organization Name	Representative Name	Designation	Contact Address	Contact Phone No	E-mail ID
1	Aajivika Global Skill Private Limited	Mukesh Kumar Verma	Director	Beside Vishal Trade, dasmile chowk, Khunti Road Ranchi, Jharkhand-835221	9507952882	aajivikaglobal@gmail.com
2	AISECT Ltd.	Teena Panthi	Assistant Manager	AISECT Ltd. 1-1-387, 3rd floor, Flat No. 403/404, GNR Heights, Above SBI,Bakaram Road, Musheerabad, Hydrabad-500020	7879982075	Teena.panthi@aisect.org
3	B. G. Infotech	Amal Das	Centre Head	Kakdihi, Mecheda, Purba, Medinipur	9434996748	Bginfotech2007@gmail.com
4	Devendra Nath Institute of Information Mation Technology (DNIIT)	Amit Kumar Tripathy	Director	Uska Road, Near Naveen Sabji Mandi, Tetari Bazar, Siddharth Nagar-272207	8765562815	aktjob@gmail.com
5	Inditech Software Wizard Pvt. Ltd.	Sandip Ghosh	Course Coordinator	Mohiari Chanpiritala, Po: Andul Mouri, PS: Domjur, Distt: Howrah, West Bengal-711302	9230027415	swizardrecruitment@gmail.com

6	Prasanthi Polytechnic	D. Prasad	Principal	Duppituru (Vill), Atchutapuram (Md). Visakhapatnam (Dist), Andhara Pradesh-531011	9849952573	prasadreddy.1279@gmail.com
7	Sidhi Vinayak Academy	Neha Verma	Director	Shiv Narayan Kunj, B Block, Shivaji Nagar, Hethu, Ranchi, JH-834002	8789837772	sidhiacadmey@gmail.com
8	Surekha IT Services	Anjani K	Manager	8-3-191/84/302, Sharan Residency, Vengalrao Nagar, Hyderabad-500038, Telangana	8125134134	info@surekhaitservices.com

Annexure IV: Training Details

Training Projections:

Year	Estimated Training # of Total Candidates	Estimated training# of Women	Estimated training# of People with Disability
2024-25	500	200	20
2025-26	500	200	20
2026-27	1000	200	20

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

Annexure V: Blended Learning

Blended Learning Estimated Ratio & Recommended Tools:

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	Online interaction platforms like JitSi Meet, Bharat VC, Google Meet, MS Teams, etc.	70:30
2	Imparting Soft Skills, Life Skills, and Employability Skills /Mentorship to Learners	Online interaction platforms like JitSi Meet, Bharat VC, Google Meet, MS Teams, etc.	70:30
3	Showing Practical Demonstrations to the learners	Through Virtual Software and Online interaction platforms like JitSi Meet, Bharat VC, Google Meet, MS Teams, etc.	70:30

4	Imparting Practical Hands-on Skills/ Lab Work/ workshop/ shop floor training	Through Virtual Software and Online interaction platforms like JitSi Meet, Bharat VC, Google Meet, MS Teams, etc.	70:30
5	Tutorials/ Assignments/ Drill/ Practice	Online interaction platforms like JitSi Meet, Bharat VC, Google Meet, MS Teams, etc.	70:30
6	Proctored Monitoring/ Assessment/ Evaluation/ Examinations	NIELIT Remote Proctored Software	Online: 100% Theory Offline: 100% Practical
7	On the Job Training (OJT)/ Project Work Internship/ Apprenticeship Training	Virtual Software Platform	Either 100% online in a virtual environment Or 100% offline in the Industry.

Annexure VI: Standalone NOS- Performance Criteria details

1. Description

This course provides an in-depth exploration of embedded systems and communication protocols, covering fundamentals and hands-on implementation of UART, SPI, I2C, CAN, USB, and Ethernet communication. Students will learn about the principles, configurations, and practical interfacing of these communication methods, enhancing their skills in developing robust and efficient embedded systems. Emphasis is placed on understanding data communication basics and integrating various communication standards in real-world applications.

2. Scope

The scope of this course encompasses a comprehensive study of embedded systems and their communication protocols. It covers the fundamentals of data communication, including serial and parallel communication techniques. Students will delve into UART, SPI, I2C, CAN, USB, and Ethernet communication standards, understanding their principles, configurations, and practical implementations. The course includes hands-on programming and interfacing exercises, preparing students to design and develop embedded systems with various communication capabilities for real-world applications.

3. Elements and Performance Criteria

UART (Universal Asynchronous Receiver-Transmitter) Communication:

- Demonstrate understanding of UART communication principles, including start/stop bits and data frames.
- Utilize software tools to configure UART settings on various microcontrollers.
- Write and debug code to implement UART communication between a microcontroller and peripheral devices.

SPI (Serial Peripheral Interface) Communication

- Explain the principles and components of SPI communication, including master/slave roles and data exchange mechanisms.
- Write and test code to enable SPI communication between microcontrollers and peripherals.
- Develop a project showcasing effective SPI communication in an embedded system application.

I2C (Inter-Integrated Circuit) Communication:

- Describe the fundamentals of I2C communication, including addressing and data transfer mechanisms.
- Configure I2C bus parameters, including clock speed and addressing modes.
- Develop and debug code to implement I2C communication between devices.

4. **Knowledge and Understanding (KU):**
   The individual on the job needs to know and understand:

1. **UART (Universal Asynchronous Receiver-Transmitter) Communication:**
   - Understand the fundamental concepts of UART communication, including start/stop bits, parity, and baud rate.
   - Know the various configuration settings of UART such as baud rate, parity, stop bits, and data bits.

2. **SPI (Serial Peripheral Interface) Communication**
   - Understand the principles of SPI communication, including the roles of master and slave devices, and data exchange mechanisms.
   - Learn the configuration settings of SPI, such as clock polarity, clock phase, and data order.

3. **I2C (Inter-Integrated Circuit) Communication:**

   - o Understand the basic principles of I2C communication, including addressing and data transfer mechanisms.
   - o Learn the configuration settings of the I2C bus, including clock speed and addressing modes.
   - o Apply I2C communication in hands-on projects, demonstrating practical knowledge and implementation skills.

5. Generic Skills (GS):

User/individual on the job needs to know how to:

Technical Proficiency

- Expertise in connecting and configuring communication interfaces such as UART, SPI, and I2C with microcontrollers and peripherals.
- Deep understanding of various communication protocols and their practical implementation.

Project Management

- Ability to plan and manage embedded systems projects, including setting timelines and milestones.
- Skill in executing projects efficiently, ensuring all communication components are correctly integrated and functioning.

Collaboration and Teamwork

- Strong ability to work effectively within a team, collaborating with peers, and sharing knowledge.
- Clear communication skills to convey complex technical information to team members and stakeholders.

Annexure VII: Assessment Criteria

Detailed PC-wise assessment criteria and assessment marks for the NOS are as follows:

NOS/Module Name	Assessment Criteria for Performance Criteria	Theory Marks	Practical Marks	Project /Presentation /Assignment Marks	Viva/ Internal Assessment (Marks)
NOS1:Basics of Embedded Communication Protocols	*UART (Universal Asynchronous Receiver-Transmitter) Communication*	30	20	-	6
	• Ability to differentiate between hard and soft real-time requirements and understand their implications on system design.	-	-	-	-
NOS Code: NIE/ELE/N0226	• Demonstrate knowledge of real-time constraints, deadlines, and response times in various application scenarios.	-	-	-	-
	• Analyze and assess real-world examples to determine the appropriate real-time system characteristics required for different applications.	-	-	-	-
	SPI (Serial Peripheral Interface) Communication	30	20	-	7
	• Successfully implement and evaluate task scheduling algorithms such as priority-based, round-robin, and rate-monotonic scheduling.	-	-	-	-
	• Demonstrate proficiency in handling interrupts, managing system resources effectively, and optimizing memory allocation in an RTOS environment.			-	-
	• Design and develop real-time applications using RTOS principles, including task creation, management, synchronization, and resource utilization.	-	-	-	-
	I2C (Inter-Integrated Circuit) Communication:	40	20	-	7
	• Evaluate and compare power management strategies and techniques for embedded systems, considering trade-offs between performance and energy efficiency.	-	-	-	-

	• Apply context switching and task synchronization techniques in practical scenarios, ensuring system stability and real-time responsiveness.	-	-	-	-
	• Successfully complete hands-on exercises and projects that involve designing and implementing real-time systems using RTOS, demonstrating effective problem-solving and practical application of theoretical knowledge.				
		100	60	20	20
NOS Total		200			

Annexure VIII: Assessment Strategy

Assessment of the qualification evaluates candidates to ascertain that they can integrate knowledge, skills and values for carrying out relevant tasks as per the defined learning outcomes and assessment criteria.

The underlying principle of assessment is fairness and transparency. The evidence of the outcomes and assessment criteria. Competence acquired by the candidate can be obtained by conducting Theory (Online), Practical assessment, internal assessment, Project/Presentation/ Assignment, Major Project. The emphasis is on the practical demonstration of skills & knowledge gained by the candidate through the training. Each OUTCOME is assessed & marked separately. A candidate is required to pass all OUTCOMES individually based on the passing criteria.

About Examination Pattern:

1. The question papers for the theory and practical exams are set by the Examination wing (assessor) of NIELIT HQS.

2. The assessor assigns roll number.

3. The assessor carries out theory online assessments through remote proctoring methodology. Theory examination would be conducted online and the paper comprise of MCQ. Conduct of assessment are through trained proctors. Once the test begins, remote proctors have full access to candidate's video feeds and computer screens. Proctors authenticate the candidate based on registration details, pre-test image captured and I-card in possession of the candidate. Proctors can chat with candidates or give warnings to candidates. Proctors can also take screenshots, terminate a specific user's test session, or re-authenticate candidates based on video feeds.

4. An External Examiner/ Observer may be deployed including NIELIT officials for evaluation of Practical examination/ internal assessment / Project/ Presentation/. Major Project (if applicable) would be evaluated preferably by external/ subject expert including NIELIT officials.

5. Pass percentage would be 50% marks in each component.

6. Candidates may apply for re-examination within the validity of registration (only in the assessment component in which the candidate failed).

7. For re-examination prescribed examination fee is required to be paid by the candidate only for the assessment component in which the candidate wants to reappear.

8. There would be no exemption for any paper/module for candidates having similar qualifications or skills.

9. The examination will be conducted in English language only.

Quality assurance activities: A pool of questions is created by a subject matter expert and moderated by other SME. Test rules are set beforehand. Random set of questions which are according to syllabus appears which may differ from candidate to candidate. Confidentiality and impartiality are maintained during all the examination and evaluation processes.

Annexure IX: Acronym and Glossary

Acronym

Acronym	Description
AA	Assessment Agency
AB	Awarding Body
NCrF	National Credit Framework
NOS	National Occupational Standard(s)
NQR	National Qualification Register
NSQF	National Skills Qualifications Framework

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.