QUALIFICATION FILE–Standalone NOS

Essentials of Scripting language for embedded applications

☐ 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:

NATIONAL INSTITUTE OF ELECTRONICS AND INFORMATION TECHNOLOGY (NIELIT)

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Section 1: Basic Details

1.	NOS-Qualification Name	Essentials of Scripting language for embedded applications	
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-02895-2024-V1-NIELIT	**5. NCrF/NSQF Level: 5**
6.	Brief Description of the Standalone NOS	This course provides a comprehensive introduction to scripting languages and their applications in embedded systems. Designed for students and professionals seeking to enhance their embedded systems skills, this course covers Python, Bash, and Tcl/Tk scripting languages, focusing on practical implementation and interaction with embedded hardware. Through theoretical knowledge and hands-on practice, participants will learn to develop, debug, and deploy scripts for various embedded 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**
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)*

Table for item 11:

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 Languages.
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 Systems Development
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	• Understanding the applications of scripting in embedded systems, including automation, hardware interaction, and system configuration. • Familiarity with MicroPython and CircuitPython libraries for embedded systems programming. • Exploration and utilization of scripting libraries for embedded development, including real-world examples and case studies to understand their practical applications.	• This outcome enhances theoretical knowledge by providing a conceptual understanding of how scripting languages are applied in embedded systems. • This outcome involves theoretical knowledge about specific scripting libraries tailored for embedded systems. • This outcome contributes to theoretical knowledge by exposing learners to a range of scripting libraries used in embedded development.	5
Professional and Technical Skills/ Expertise/ Professional Knowledge	• Develop proficiency in scripting languages like Python, Bash, and Tcl/Tk. Candidates should be able to write and understand scripts effectively, utilizing variables, data types, control structures, and libraries specific to each scripting language. • Demonstrate the ability to interact with embedded hardware using scripting languages. • Capability to handle errors and debug scripts in an embedded environment.	• This outcome directly enhances technical skills by requiring candidates to develop proficiency in scripting languages such as Python, Bash, and Tcl/Tk. • The ability to interact with embedded hardware using scripting languages demonstrates technical expertise in embedded systems. • Competence in error handling and debugging in an embedded environment is a technical skill that ensures scripts run smoothly and reliably.	5
Employment Readiness & Entrepreneurship Skills & Mind-set/Professional Skill	• Demonstrate a strong understanding of scripting languages like Python, Bash, and Tcl/Tk as applied to embedded systems. • Proficient in identifying and resolving issues in embedded systems scripts, including error handling, debugging techniques, and troubleshooting hardware-software interactions.	• Demonstrating a strong understanding of scripting languages like Python, Bash, and Tcl/Tk in the context of embedded systems showcases technical proficiency. • Proficiency in identifying and resolving issues in embedded systems scripts, including error handling, debugging techniques, and troubleshooting hardware-software interactions,	5

	• Ability to innovate and adapt scripting solutions for diverse embedded applications.	reflects strong problem-solving skills	
Broad Learning Outcomes/ Core Skill	• Demonstrate a thorough understanding of scripting languages such as Python, Bash, and Tcl/Tk, including syntax, data structures, control flow, and basic scripting concepts. • Proficient in scripting for embedded hardware interaction, including GPIO manipulation, serial communication, and interfacing with sensors and actuators using Python. • Ability to develop graphical user interfaces (GUIs) for embedded applications using scripting languages like Tcl/Tk.	• Demonstrating a thorough understanding of scripting languages like Python, Bash, and Tcl/Tk, including syntax, data structures, control flow, and basic scripting concepts. • Proficiency in scripting for embedded hardware interaction, such as GPIO manipulation, serial communication, and interfacing with sensors and actuators using Python, is a core skill in embedded systems development.	**5**
Responsibility	• Course should equip learners with the responsibility to effectively use scripting languages like Python, Bash, and Tcl/Tk for embedded systems development. • Learners should be able to responsibly interact with embedded hardware components such as GPIO pins, sensors, actuators, and microcontrollers using scripting languages.	• The ability to responsibly interact with embedded hardware components such as GPIO pins, sensors, actuators, and microcontrollers using scripting languages. • Equipping learners with the responsibility to effectively use scripting languages like Python, Bash, and Tcl/Tk for embedded systems development.	**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 graphics card, Display size 15.6-inch, Wi-Fi connectivity and Wired Optical Mouse	15
5	Internet Connectivity	Seamless internet connectivity with at least 100 Mbps without firewall	
6	Development Board & Tools	Computer with Python interpreter, Bash shell, Tcl interpreter, development boards (for GPIO manipulation and sensor interfacing), sensors and actuators, and access to relevant documentation and libraries.	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 NOS provides a comprehensive introduction to scripting languages and their applications in embedded systems. Designed for students and professionals seeking to enhance their embedded systems skills, this course covers Python, Bash, and Tcl/Tk scripting languages, focusing on practical implementation and interaction with embedded hardware. Through theoretical knowledge and hands-on practice, participants will learn to develop, debug, and deploy scripts for various embedded applications.

2. Scope

The course aims to equip students with the ability to effectively utilize scripting languages for embedded systems development and provide hands-on experience in programming and interacting with embedded hardware using Python, Bash, and Tcl/Tk.

3. Elements and Performance Criteria

Overview of scripting languages:

- Student can explain the key characteristics and benefits of scripting languages in the context of embedded systems.
- Student can provide examples of how scripting languages are used to automate tasks and enhance flexibility in embedded systems.
- Student can compare and contrast the features of different scripting languages commonly used in embedded systems.

GPIO manipulation with Python:

- Student can demonstrate the ability to write Python code to interact with GPIO pins on a microcontroller or embedded board.
- Student can troubleshoot and resolve common issues related to GPIO manipulation in Python scripts.
- Student can design and implement a project that involves controlling external devices, such as LEDs or sensors, using GPIO manipulation with Python.

Introduction to MicroPython and CircuitPython:

- Student can explain the differences between MicroPython and CircuitPython and their advantages for developing embedded applications.
- Student can demonstrate the use of MicroPython or CircuitPython to program a microcontroller or embedded device.
- Student can develop a simple embedded project using MicroPython or CircuitPython that showcases their understanding of these optimized Python variants.

4. **Knowledge and Understanding (KU):**

The individual on the job needs to know and understand:

- Students will develop a solid understanding of what scripting languages are, their purpose, and the advantages they offer in the context of embedded systems. They will grasp the significance of scripting in automating tasks, simplifying development, and enhancing flexibility in embedded systems.
- Students will acquire knowledge of Python syntax, basic constructs, variables, data types, and operators. They will understand how to apply control structures such as loops and conditional statements in Python scripts for embedded systems.
- Students will gain an understanding of how to manipulate GPIO (General Purpose Input/Output) pins using Python to control external devices and interface with sensors and actuators. They will comprehend the principles of serial communication using Python for embedded applications.
- Students will learn about exception handling in Python and debugging techniques tailored for embedded scripting, enabling them to identify and resolve issues in embedded Python scripts effectively.

5. **Generic Skills (GS):**

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

- Students will enhance their problem-solving skills by troubleshooting errors in Python scripts, identifying issues in embedded hardware interaction, and resolving challenges related to scripting in embedded systems.
- Through analyzing different scripting languages, Python constructs, and libraries for embedded applications, students will critical thinking skills to evaluate the most effective solutions for embedded system development.
- Students will improve their programming skills, specifically in Python, by mastering syntax, constructs, and best practices for embedded systems development. They will also gain handson experience in implementing scripts for interacting with hardware components.
- Students will enhance their communication skills by articulating complex technical concepts related to scripting languages, embedded hardware interaction, and debugging techniques. They will also be able to effectively present their findings and project outcomes.

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:Essentials of Scripting language for embedded applications NOS Code: NIE/SSC/N1015	*Overview of scripting languages:*	30	20	-	6
	Student can explain the key characteristics and benefits of scripting languages in the context of embedded systems.	-	-	-	-
	Student can provide examples of how scripting languages are used to automate tasks and enhance flexibility in embedded systems.	-	-	-	-
	Student can compare and contrast the features of different scripting languages commonly used in embedded systems.	-	-	-	-
	GPIO manipulation with Python:	40	20	-	7
	Student can demonstrate the ability to write Python code to interact with GPIO pins on a microcontroller or embedded board.	-	-	-	-
	Student can troubleshoot and resolve common issues related to GPIO manipulation in Python scripts.	-	-	-	-
	Student can design and implement a project that involves controlling external devices, such as LEDs or sensors, using GPIO manipulation with Python.	-	-	-	-
	Introduction to MicroPython and CircuitPython:	30	20	-	7
	Student can explain the differences between MicroPython and CircuitPython and their advantages for developing embedded applications.	-	-	-	-
	Student can demonstrate the use of MicroPython or CircuitPython to program a microcontroller or embedded device.	-	-	-	-

	Student can develop a simple embedded project using MicroPython or CircuitPython that showcases their understanding of these optimized Python variants.	-	-	-	-
		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.