

QUALIFICATION FILE SUMMARY

Qualification Title	Post Graduate Diploma in Internet of Things (IoT)
Qualification Code	NIELIT/ES/2/13
Body/Bodies which will Assess Candidates	Examination Cell, National Institute of Electronics and Information Technology, 6-CGO Complex, Electronics Niketan, Lodhi Road, New Delhi. 110003.
Body/Bodies which will Award the Certificate for the Qualification.	Certification Division, National Institute of Electronics and Information Technology, 6-CGO Complex, Electronics Niketan, Lodhi Road, New Delhi. 110003.
Body which will Accredit Providers to offer the Qualification.	Accreditation Division, National Institute of Electronics and Information Technology, 6-CGO Complex, Electronics Niketan, Lodhi Road, New Delhi. 110003.
Occupation(s) to which the Qualification Gives Access	Specialized IoT Engineer
Proposed Level of the Qualification in the NSQF.	Level 7
Notional Learning Hours	470 Hours. (6 Month Full Time)
Entry Requirements / Recommendations.	<ul style="list-style-type: none"> • M.E./M.Tech or B.E./B.Tech in Electronics/Electronics & Communication/Electrical/Electrical & Electronics/Instrumentation/ Biomedical /Computer Science/Information Technology • MSc in Electronics/ Instrumentation/Computer Science/Information Technology.
Progression From the Qualification.	<ul style="list-style-type: none"> • Specialized IoT Engineer <li style="text-align: center;">↓ • IoT System Design Engineer <li style="text-align: center;">↓ • IoT System Manager
Planned Arrangements for RPL.	<ul style="list-style-type: none"> • Presently only candidates who undergo training shall be assessed. • It will be incorporated once RPL strategy is finalized

Formal Structure of the Qualification				
Module Code	Title of Unit or other Component (include any identification code used)	Mandatory / Optional	Estimated Size (Learning Hours)	Level
IoT-01	The Internet of Things: Brain Storming Basics	Mandatory	50	7
IoT-02	The IOT Microcontroller Platform	Mandatory	75	
IoT-03	The Basics of Sensors and Actuators	Mandatory	75	
IoT-04	Interfacing of Android with Internet	Mandatory	75	
IoT-05	Arduino Communication with Android Phone & Cloud	Mandatory	75	
IoT-06	IoT: Project	Mandatory	100	
IoT-07	Enhancing Communication & Soft Skill	Mandatory	20	

Please Attach any Document giving Further Detail about the Structure of the Qualification – e.g. a Curriculum or Qualification Pack. Detailed Curriculum: Attached at Annexure III.

SECTION 1 **ASSESSMENT**

Name of Assessment Body:

Examination Cell

National Institute of Electronics and Information Technology
6-CGO Complex, Electronics Niketan,
Lodhi Road, New Delhi. 110003.

Will the Assessment Body be Responsible for RPL Assessment?

Yes. We will conduct Online/Entrance Test/Interview of the Participants for Admission. Entrance test will be based on Aptitude (20%), Logical reasoning (20%), C Programming (10%) and Basic electronics (30%) and Internet (20%). Basic Electronics includes topics of Digital, Analog, Microprocessor/Microcontroller, Computer Organization, Signals and Systems. At the course end, we will conduct Theory and Practical Examination for each module except the Final Module of Project Work.

Finally, Project Work will be assessed by oral presentation and live demo of project to be given by candidates. Certificates will be awarded to only successful Candidates.

Describe the overall assessment strategy and specific arrangements which have been put in place to ensure that assessment is always valid, consistent and fair and show that these are in line with the requirements of the NSQF:

The emphasis is on practical demonstration of skills & knowledge based on the performance criteria. Each OUTCOME is assessed & marked separately. Student is required to pass in all OUTCOMES individually and marks are allotted.

Following assessment methodologies are used.

- A. Written Assessment (MCQ-Type – Online Examination)
- B. Practical Assessment
- C. Presentation & Viva Voce Assessment

Supporting evidences for Assessment

1. The assessor collects a copy of the attendance for the training done under the scheme. The attendance sheets are signed and stamped by the Examination Superintendent/ Head of Institution.
2. The assessor verifies the authenticity of the candidate by checking the photo ID card/Hall Ticket issued by the institute as well as any one Photo ID card issued by the Central/Government. The same is mentioned in the attendance sheet.
3. The Registration/Examination Division assigns roll number.
4. The assessor takes photograph of all the students along with the assessor standing in the middle and with the centre name/banner at the back as evidence.

Please attach any documents giving further information about assessment and/or RPL. ASSESSMENT EVIDENCE

Complete the following grid for each grouping of NOS, assessment unit or other component as listed in the entry on the structure of the qualification on page 1.

Job Role Specialized IoT Engineer

Title of Unit/Component:

(Detailed Curriculum attached As Annexure-III)

Assessable Outcomes	Assessment criteria for the outcome	Total Mark	Written	Practical	Internal/ Viva-voce
1. Recognize the Components of The Internet of Things	Identify Components of IOT Devices and different communication Technologies	100	30	15	15
	Selection of Communication Technologies for different IOT Systems		20	10	10
		Total	50	25	25
2 Getting practical Knowledge of IOT Microcontroller Platform	Programming Microcontroller, Understanding Arduino Board and its component	100	10	10	10
	Follow the concepts of writing Arduino Sketches		10	5	5
	Upgrade the advanced skills to use Timers for IOT		15	5	5
	Upgrade the advance skills to use threads in sketches		15	5	5
	Total	50	25	25	
3 Explain the Concept of Sensors and Actuators	Establish and Connect different sensors such as: Humidity, Temperature, distance etc. to Arduino Board	100	10	5	5
	Functioning of Actuators		10	5	5
	How to Connect Relays and Servomotors to Arduino Board		10	5	5
	Reading Data from Analog and Digital		10	5	5

	Sensors				
	Attaining skills for use of Serial Port and Protocol		10	5	5
		Total	50	25	25
4 Develop Concept of Interfacing of Arduino with Internet	Identify for connecting Arduino with Internet	100	5	5	5
	Execute Client and Server Technologies		10	5	5
	Skills for connecting Arduino with Wi-Fi		10	5	5
	Follow Concepts of Cloud Computing		10	5	5
	Upgrade advance skills for sending data on Cloud Platform		15	5	5
		Total	50	25	25
5 Develop Concept of Arduino Communication with Android phone & Cloud	Follow and maintain of Cloud Computing Detail Analysis	100	5	5	5
	Recognize different components of Bluetooth and Serial Communication		5	5	5
	Practical 1: Sending Air Quality data to Andriod Phone		20	5	5
	Practical 2 : Use Arduino to Upload feed data from environmental Sensors		20	10	10
		Total	50	25	25
6 Practical IoT: Project	Project Based on, <ul style="list-style-type: none"> • Smart parking • Intelligent Transport System • Smart urban lighting. • Waste management. • Smart city maintenance • Tele-care • Citizen safety • Smart Grid • Smart Energy • Water Management • Agriculture 	150	150		
		Total	150		
7 Enhancing Communication & Soft Skill	Develop Communication Skill	50	10	NA	NA
	Managing career, staff and professional relationships		20	NA	NA
	Ready for interview		20	NA	NA
		Total	50	NA	NA
Grand Total			700	125	125

Means of assessment 1

Proctored online assessments (LAN and Web based), carried out using a variety of question formats applicable for linear / adaptive methodologies; performance criteria being assessed via tests, simulations, and multiple choice questions etc.