

CONTACT DETAILS OF THE BODY SUBMITTING THE QUALIFICATION FILE**Name and address of submitting body:**

National Institute of Electronics and Information Technology (NIELIT) NIELIT Bhawan, Plot No 3, PSP Pocket, Sector-8, Dwarka, New Delhi-77

Name and contact details of individual dealing with the submission

Name: Shri J. Mohan Koli**Position in the organisation:** Deputy Director**Address if different from above:** Same as above**Tel number(s):** 011 25308300 Ext 126**E-mail address:** jmohan@nielit.gov.in**List of documents submitted in support of the Qualifications File****Annexure I - Detailed Curriculum**

- (A) Syllabus and Lesson Plan
- (B) Indicative list of hardware and software to conduct the training
- (C) Trainer's qualification
- (D) Practical & Project guidelines
- (E) Credit system
- (F) Sample Practical Assignments
- (G) Sample question papers

Model Curriculum to be added which will include the following:

- **Indicative list of tools/equipment to conduct the training**
- **Trainers qualification**
- **Lesson Plan**
- **Distribution of training duration into theory/practical/OJT component**

Distribution of training duration into theory/practical/Project component-

Theory in Hours	Training duration		
	Practical in Hours	Project in Hours	Total in Hours
192	288	40	520

- (A) Syllabus and Lesson Plan
- (B) Indicative list of hardware and software to conduct the training
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SUMMARY

1	Qualification Title	O Level
2	Qualification Code, if any	NIELIT/IT/L5/003
3	NCO code and occupation	2166.0300, 2511.0100, 2512.0100
4	Nature and purpose of the qualification (Please specify whether qualification is short term or long term)	Short term The objective of the Scheme is to generate skilled manpower in the area of Information Technology (IT) at the national level by utilizing the facilities and infrastructure available with the institutions/organizations in the non-formal sector.
5	Body/bodies which will award the qualification	Examination Wing, NIELIT Headquarters, National Institute NIELIT Bhawan, Plot No 3, PSP Pocket, Sector-8, Dwarka, New Delhi-77
6	Body which will accredit providers to offer courses leading to the qualification	NIELIT Headquarters, National Institute of Electronics NIELIT Bhawan, Plot No 3, PSP Pocket, Sector-8, Dwarka, New Delhi-77
7	Whether accreditation/affiliation norms are already in place or not, if applicable (if yes, attach a copy)	Yes, Given in Annexure V
8	Occupation(s) to which the qualification gives access	i. User Interface (UI) Designer ii. Web Designer iii. Web Publication Assistant iv. Office Automation Assistant v. IoT Application Integrator
9	Job description of the occupation	After undergoing this qualification, candidate will be able to perform different job roles. The job roles are User Interface (UI) designer, Web Designer, Web Publication Assistant, Office Automation Assistant and IoT Application Integrator. The job of a UI designer is to make software interfaces interactive in terms of looks, style and customer's experience in accessing website/applications.

		<p>The job of a Web Designer is to design the layout of website and coding. Web Designer further focuses on graphics and contents part of web site and its flow.</p> <p>The responsibility of a Web Publication Assistant is to upload images, contents, videos and other website related material on web site. Before uploading material, a Web Publication Assistant ensures that data is correct in all respects.</p> <p>The responsibility of Office Automation Assistant is to format and edit any type of document using tools. The person is also responsible for maintaining records digitally.</p> <p>IoT Application Integrator ensures that all the IoT Devices, IoT Data, IoT Platforms and applications work together in an organization in order to meet business objectives.</p>
10	Licensing requirements	-NA-
11	Statutory and Regulatory requirement of the relevant sector (documentary evidence to be provided)	-NA-
12	Level of the qualification in the NSQF	5
13	Anticipated volume of training/learning required to complete the qualification	The duration of 'O' level (IT) course is 520 learning hours including 40 hours of Project and the minimum period to cover contents is one year for candidates undergoing 'O' Level after 10+2 and six months for candidates undergoing 'O' Level after Graduation
14	Indicative list of training tools required to deliver this qualification	Given in Annexure I(B)
15	Entry requirements and/or recommendations and minimum age	<p>1. Students from Institutes conducting accredited courses: 10+2 or ITI Certificate (One Year) after class 10 followed, in each case, by a NIELIT accredited 'O' Level course.</p>

		<p>Or Successful completion of the second year of a Government recognized polytechnic engineering diploma course after class 10, followed by an accredited ‘O’ Level course concurrently during the third year of the said polytechnic engineering diploma course. The certificate of ‘O’ level will be awarded only after successful completion of the polytechnic engineering diploma.</p> <p>2. Direct Applicants 10+2 or ITI Certificate (One Year) after class 10, followed in each case, by one-year relevant experience. Relevant experience connotes job experience in IT, including teaching in a recognized institution as a faculty member, excludes coaching.</p> <p>Or A pass in the NCVT-DP&CS (data Preparation & Computer Software) Examination, conducted by DGE&T (Govt. of India) Age: No Bar</p>
16	Progression from the qualification (Please show Professional and academic progression)	<p>Academic: O level->A Level ->B level</p> <p>Professional: User Interface Designer-> UX Designer ->Graphics Designer</p> <p>Web Designer->Web Developer-> Front end Developer Web Publication Assistant->Sr Web Publication Assistant-> Sr. Web Designer Office Automation Assistant ->Senior Assistant ->Section Manager IoT Application Integrator-> IoT Support Engineer-> IoT Application Developer</p>
17	Arrangements for the Recognition of Prior learning (RPL)	Yes, Given at Sr. no15
18	International comparability	Yes. Given in annexure IV ‘O’ Level course of NIELIT is equivalent to TQC Certification of Computer skill Foundation (CSF) Standards, Taiwan.

NSQF QUALIFICATION FILE

Approved in 2nd NSQC – NCVET, Dated: 22nd September, 2020

NSDA Code 2020/ITES/NIELIT/03885
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NSQC APPROVED

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19	Date of planned review of the Qualification	3-4 years		
20	Formal structure of the Qualification			
	Mandatory components			
	Title of Component and Identification Code/NOSs/Learning outcomes	Estimated size (learning hours)		Level
		Theory Learning Hours	Practical Learning Hours	
	M1-R5: Information Technology Tools and Network Basics	48	72	5
	M2-R5: Web Designing & Publishing	48	72	5
	M3-R5: Programming and Problem Solving through Python	48	72	5
	M4-R5: Internet of Things and its Applications	48	72	5
	PR1-R5: Practical based on M1-R5, M2-R5, M3-R5 and M4-R5			5
	PJ1-R5: Project	40		5
	Sub Total (A)	520		
	Optional Components			
	Title of Component and Identification Code/NOSs/Learning outcomes	Estimated size (learning hours)		Level
	Sub Total (B)	-		
	Total (A+B)	520		

SECTION 1 **ASSESSMENT**

21	<p>Body/Bodies which will carry out assessment:</p> <p>Examination Wing, NIELIT Headquarters, National Institute of Electronics and Information Technology (NIELIT) NIELIT Bhawan, Plot No 3, PSP Pocket, Sector-8, Dwarka, New Delhi-7</p>
22	<p>How will RPL assessment be managed and who will carry it out?</p> <p>Yes, given at Sr. no 15.</p>

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NSQC APPROVED

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23	Describe the overall assessment strategy and specific arrangements which have been put in place to ensure that assessment is always valid, reliable and fair and show that these are in line with the requirements of the NSQF.			
	Theory examination for each module under the fifth revised syllabus would be for a duration of three hours and the total marks for each subject would be 100.			
	A. All theory examinations will be conducted in the OFFLINE mode. Following assessment methodologies are used.			
	Each paper consists of two parts.			
	- Part I carries 40 marks and contains forty questions, which is a combination of Objective type - Multiple choice questions, Fill-up, True/ False and Match the Following.			
	- Part II carries 60 marks and contains five subjective type questions.			
	B One Practical examination of three hours duration and 100 marks would be conducted. The emphasis is on the practical demonstration of skills & knowledge based on the performance criteria. Practical exam carrying 100 marks, out of which 80 marks shall be for the Practical/Hands-on and 20 marks for Viva Voce.			
	The Practical examination will be based on the syllabi based on M1-R5, M2- R5, M3-R5 and M4-R5 modules of 'O' Level course.)			
	Laboratory/ Practical work will be conducted at Institutions / organizations, which are running the course. NIELIT will be responsible for holding the examination for theory and practical both for the students from Accredited Centres and direct candidates.			
	C Project: The Project is carried out by the student under guidance and support of faculty and management of the respective Institute/ Organization). Project Completion Certificate is a mandatory to qualify 'O' Level-IT.			
		Title of Component and Identification	Max Marks	Pass Marks
	1	M1-R5: Information Technology Tools and Network Basics	100	50% in each Theory and Practical Examination
	2	M2-R5: Web Designing & Publishing	100	
	3	M3-R5: Programming and Problem Solving through Python	100	
	4	M4-R5: Internet of Things and its Applications	100	
	5	PR1-R5: Practical based on M1-R5, M2- R5, M3-R5 and M4-R5	100	

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	6	PJ1-R5: Project	Project completion certificate is required to qualify 'O' Level-IT
		Total Marks	500
<p><u>Pass Percentage</u></p> <p>To qualify a module, a candidate must have obtained at least 50% in each theory and practical examination. A successful project complete certificate is mandatory for student to qualify 'O' Level course. The marks will be translated into grades, while communicating results to the candidates. No rounding takes place in the calculation of grades. The gradation structure is as given-</p>			
		Pass Percentage	Grade
		Failed (<50)	F
		>= 50% to < 55%	D
		>= 55% to < 65%	C
		>= 65% to < 75%	B
		>= 75% to < 85%	A
		>=85%	S

ASSESSMENT EVIDENCE**24. Assessment evidences**(i) **M1-R5: Information Technology Tools and Network Basics**

Outcomes to be assessed/NOSs to be assessed	Assessment criteria for the outcome
Introduction to Computer-	<ul style="list-style-type: none"> • Identify computers, ITgadgets • Their evolution and applications. • Identify various input, output and hardware components of a computer along with storage devices. • familiar with various types of software, utilities used for computer and mobileapps.
Introduction to Operating System	<ul style="list-style-type: none"> • Use of Operating System for both desktop and mobile devices. • Identify various desktop screen components and modify various properties, date, time etc. • Add and remove new program and features, manage files and folders. • Well versed with printing • Various types of file extensions.
Word Processing	<ul style="list-style-type: none"> • Usage of Word Processing, details of word processing screen. • Opening, saving and printing a document including pdf files. • Document creation, formatting of text, paragraph and whole document. • Inserting Header and Footer on the document. • Finding text on a word document and correcting spellings. • Inserting and manipulating tables, enhancing table using borders and shading features. • Preparing copies of a document labels etc. for sending various recipients using Mail Merge.

<p>Presentation</p> <p>NSQF QUALIFICATION FILE Approved in 2nd NSQC – NCVET, Dated: 22nd September, 2020</p>	<ul style="list-style-type: none"> • Create Presentation • Opening/saving a presentation and printing of slides and handouts. • Manipulating slides to enhance the look of the slides as well as whole presentation by inserting a picture, objects, multimedia formatting etc. • Running a slide show with various transitions.
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NSDA Code
2020/ITES/NIELIT/03885

<p>Spreadsheet</p>	<ul style="list-style-type: none"> • Use of Spreadsheet Processing and details of Spreadsheets screen. • Opening, saving and printing a Spreadsheet. • Spreadsheet creation, inserting and editing data in cells, sorting and filtering of data. • Inserting and deleting rows/columns. • Use of basic formulas and functions. • Preparation of chart to represent the information in a pictorial form.
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Introduction to Internet and WWW	<ul style="list-style-type: none"> • Test of knowledge of various types of networks and topologies • Use of the Internet and various browsers available to access the Internet. • Connect to the Internet using various modes of connections/devices available.
E-mail, Social Networking and e-Governance Services	<ul style="list-style-type: none"> • Creation of an email account, compose an email, reply an email and send the email along with attachments • Use of Social Networking sites, Instant Messaging and Blogs. • Get familiar with e-Governance Services, • e-Commerce and Mobile Apps.
Digital Financial Tools and Applications	<ul style="list-style-type: none"> • Use of Digital Financial Tools. • Use of Internet Banking Modes. • Use of the Digital Locker and will be able to store documents in Digital Locker.
Overview of Future Skills & Cyber Security	<ul style="list-style-type: none"> • Latest trends and technologies in upcoming fields in IECT. • Need of Cyber Security and will be able to secure their PC and Mobile devices by using basic security features.
Means of assessment	Assessment details are given at Sr. no 23
Pass/Fail	Pass/Qualifying Criteria is also given at Sr. no 23.

(ii) **M2-R5: Web Designing & Publishing**

Outcomes to be assessed/NOSs to be assessed	Assessment criteria for the outcome
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Introduction to Web Design	<ul style="list-style-type: none"> • Types of website. • Role of front end and back end application. • Concept of client-side scripting and server-side scripting
Editors	<ul style="list-style-type: none"> • Use of different editors available for writing code. • Working of editors.
HTML Basics	<ul style="list-style-type: none"> • Develop static website using different HTML Controls.
Cascading Style Sheets (CSS)	<ul style="list-style-type: none"> • Purpose of CSS. • Role of CSS in websites. • Roles of effects in Website.
CSS Framework	<ul style="list-style-type: none"> • Use of CSS Framework to develop website effectively.
JavaScript and Angular JS	<ul style="list-style-type: none"> • Apply client-side scripting. • Addition of validations and check on forms (webpages).
Photo Editor	<ul style="list-style-type: none"> • Editing of images and embed in webpages.
Web Publishing and Browsing	<ul style="list-style-type: none"> • Publish the web sites.
Means of assessment	Assessment details are given at Sr. no23
Pass/Fail	Pass/Qualifying Criteria is also given at Sr. no23.

(iii) **M3-R5: Programming and Problem Solving through Python**

Outcomes to be assessed/NOSs to be assessed	Assessment criteria for the outcome
1. Introduction to Programming	<ul style="list-style-type: none"> • Concept of Programming. • History and evolution of Programming.
2. Algorithm and Flowcharts to solve problems	<ul style="list-style-type: none"> • Purposes & concepts of algorithm and flowchart. • Use of algorithm and flowchart to solve problem independent of language.
	<ul style="list-style-type: none"> • Different constructs of algorithm and flowchart.

3. Introduction to Python	<ul style="list-style-type: none"> • Why it one the most popular languages in the industry i.e., features of Python. • Structure of Python problem. • Scope of Python.
4. Operators, Expressions and Python Statements	<ul style="list-style-type: none"> • Use of the basic operators and expressions available in Python in developing program. • Use of various Python statements like conditional constructs, looping constructs in writing Python program.
5. Sequence data types	<ul style="list-style-type: none"> • Work with various built-in Sequence data types and their use. • Use of mutable and immutable objects and their concepts.
6. Functions	<ul style="list-style-type: none"> • Apply the in-built functions available in Python in solving different problems. • Work with modular approach using user defined functions.
3. File Processing	<ul style="list-style-type: none"> • Work with files • Reading/ writing on files.
4. Modules	<ul style="list-style-type: none"> • Concept of modules • Modular Programming • Importing
5. NumPy Basics	<ul style="list-style-type: none"> • Work on NumPy array manipulation to access data and subarrays and to split, reshape, join arrays etc
Means of assessment	Assessment details are given at Sr. no 23
Pass/Fail	Pass/Qualifying Criteria is also given at Sr. no 23.

(iv) **M4-R5: Internet of Things and its Applications**

Outcomes to be assessed/NOSs to be assessed	Assessment criteria for the outcome
1. Introduction to IoT – Applications/ Devices, Protocols and Communication Model	<ul style="list-style-type: none"> • Applications, protocols, architecture, etc. of IoT • Characteristics of IoT devices. • Physical Design/Logical Design, Functional blocks of IoT and Communication Models.

<p>2.Things and Connections</p>	<ul style="list-style-type: none"> • Closed loop/ feedback loopsystem. • Use of sensors, actuators and controllersin the IoT processflow. • TCP/IP Versus OSImodels. • Wired and wireless connectivity.
<p>3.Sensors, Actuators and Microcontrollers</p>	<ul style="list-style-type: none"> • The role of Sensors, transducers in measuring physicalquantities. • Working andcharacteristics ofactuators. • Role and use of microcontroller inbuilding various electronicdevices.
<p>4.Building IoT Applications</p>	<ul style="list-style-type: none"> • Working of microcontroller and hardware prototyping Arduinoplatform. • The role of ‘C’ language in building IoT applications. • Built-in Data-type, operators’ expressions • Conditional statements andloops. • Arrays,functions. • Digital, analog pins ofArduino. • Interfacing sensors,actuator. • Use of ArduBlockGUItool.
<p>5. Security and Future of IoT Ecosystem</p>	<ul style="list-style-type: none"> • Need of security inIoT. • Various basic concept ofsecurity. • Securitylevels. • Need of powerful CPU for Future IoT eco system.
<p>6. Soft skills- Personality Development</p>	<ul style="list-style-type: none"> • Role of positive personality anddeterminants ofpersonality. • Test of Communication and writingskills.
<p>Meansofassessment</p>	<p>Assessment details are given at Sr. no23</p>
<p>Pass/Fail</p>	<p>Pass/Qualifying Criteria is also given at Sr. no23.</p>

SECTION 2

25. EVIDENCE OF LEVEL

Title /NameofQualification/Components:		O Level	
NSQF Domain	Outcomes of the Qualification/Component	How the outcomes relates to the NSQF level descriptors	NSQF Level
Process	Candidate is required to install and maintain operating system, create documentation, make charts, handle database, apply formulas and functions, make presentations and web sites publishing, programming using Python, familiar withvariousprotocolsofIoT,cybersecurityetc.	Job that requires well developed skill, with clear choice of procedures in familiar context	5
Professional Knowledge	Candidate on the job needs to have factual knowledge of computer hardware, software, operating systems,creatingdocuments,spreadsheets,presentations,database handling, and web designing and publishing tools, c y b e r security, knowl edge of social networking sites,programming using Python, knowledge of internet ofThings, protocols etc. and implementation of IoT.	Knowledge of facts, principles, processes and general concepts in the field of work or study	5
Professional Skills	Candidate needs to recall and demonstrate practicalskillrelatedtobasiccomputer,internet activitiesandprogrammingrelatedto web site development. testing, designing and	A range of cognitive and practical skills required to accomplish tasks and solve problems by selecting and applying basic methods, tools, materials and information	5

	<p>modifying programs related to IoT/website development in routine and repeat them until required outcomes are met. The outcomes of these test cases are recorded using appropriate rules, tools & using quality concepts through appropriate templates. Need to be competent to identify technical requirements in terms of hardware, software and other IT related devices.</p>		
Core Skills	<p>The candidate should understand mathematical concepts in a team environment.</p>	<p>Desired mathematical skill; understanding of social, political; and some skill of collecting and organizing information, communication.</p>	5
Responsibility	<p>They would be able to develop a web site or initially assist a web developer. They assist in the analysis and design phase of the project and designing websites in a timely, accurate fashion and provide status/report. Candidate is independently responsible to perform all the tasks as per requirements of the job, hence is responsible for own work and learning</p>	<p>Responsibility for own work and learning and some responsibility to other's works and learning.</p>	5

SECTION 3

EVIDENCE OF NEED

26	What evidence is there that the qualification is needed? What is the estimated uptake of this qualification and what is the basis of this estimate?	
	Basis	In case of other Awarding Bodies (Institutes under Central Ministries and states departments)
	Need of the qualification	This course has been designed to meet the increasing manpower requirements in computers after discussion with various ministries, MHRD etc. Recognition has been given by the Government of India to NIELIT 'O' level examination conducted by the NIELIT as equivalent to Foundation Course in IT for the purpose of employment to the posts and services under Central Government.
	Industry Relevance	Enrolment and certified details of last 3 years are attached. The job role defined for the qualification is as per the National Qualification of Occupation 2015 which is developed by Employment Directorate under the ministry of Labour and Employment in collaboration with different industry partners and as per ILO guidelines. This justifies the qualification is very much relevance for industry
	Usage of the qualification	With this qualification student will be equipped with required knowledge to develop web site/software. Participants can be employed as web designer/automation assistant/IoT Engineer
	Estimated uptake	NIELIT is having 43 Centres and 900+ accredited Centres spread all over India and approx. 40,000 candidates per year are expected to register in this course.
27	Recommendation from the concerned Line Ministry of the Government/Regulatory Body. To be supported by documentary evidences This qualification is run by National Institute of Electronics & Information Technology (NIELIT). It is an Autonomous Scientific Society under the administrative control of Ministry of Electronics & Information Technology (MoE&IT), Government of India.	
28	What steps were taken to ensure that the qualification(s) does (do) not duplicate already existing or planned qualifications in the NSQF? Give justification for presenting a duplicate qualification As the understanding and adoption models of QPS evolve in the industry and across sub-sectors, we foresee consolidation of qualification packs as a natural progression. The Qualification does not exist as per information available in public domain. The Ministry of Human Resource Development, Govt. of India has earlier recognized 'O' level examination conducted by the Computer Society of India (CSI) under the Department of Electronics Accreditation of Computer Courses (DOEACC) Scheme as equivalent to Foundation Level course for the purpose of employment to posts and services under the Central Government w.e.f. 1st March 1995 vide their notification No: F 18-23/92-TD.V/TS-IV dated 1st March 1995	

29	<p>What arrangements are in place to monitor and review the qualification(s)? What data will be used and at what point will the qualification(s) be revised or updated? Specify the review process here</p> <p>The Qualification is to be monitored and reviewed every 3-4 years. The following data will be used</p> <ul style="list-style-type: none"> Results of assessments Employer feedback will be sought post-placement Student feedbacks Workshops and seminar for reviewing the qualifications Industry Requirements Consultation/ Tie-up with Industries or Expert for review of the Curriculum
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SECTION 4

EVIDENCE OF PROGRESSION

30	<p>What steps have been taken in the design of this or other qualifications to ensure that there is a clear path to other qualifications in this sector? Show the career map here to reflect the clear progression</p> <p>This qualification consists of both technical and analytical skills and designed in such a way that it will provide core concepts of IT Skills and leading various programming techniques.</p> <p>This course gives link to higher qualification which is existing like ‘A’ level of NIELIT vide notification No: F2/ 6/ 97-TS.IIIa (.) 54 dated 26th September 2000). A successful candidate will get a certificate from NIELIT, which gives the following options of progression to the candidate</p> <ol style="list-style-type: none"> i. User Interface (UI) ii. Designer Web Designer iii. Web Publication Assistant iv. Office Automation Assistant v. IoT Application Integrator
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