

QUALIFICATIONS PACK - OCCUPATIONAL STANDARDS FOR TELECOM INDUSTRY

What are Occupational Standards(OS)?

- OS describe what individuals need to do, know and understand in order to carry out a particular job role or function
- OS are performance standards that individuals must achieve when carrying out functions in the workplace, together with specifications of the underpinning knowledge and understanding

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Introduction

Qualifications Pack- Telecom Terminal Equipment Applications (Native Applications)

SECTOR:TELECOM

SUB-SECTOR: Handset (Terminal Applications)

OCCUPATION: TERMINAL EQUIPMENT APPLICATION DEVELOPER

REFERENCE ID: TEL/Q2301

Aligned to: NCO-2015/2153.0102

Brief Job Description: Native Mobile Application Developer is responsible for creating customized Applications for any Mobile platform that can be used by Smartphone or Tablets running on iOS, Android, Blackberry and Windows 8x Operating Systems. Application Developer creates User Interfaces, writes business logics for events, activities and value added services for apps. The Application Developer also performs unit tests for the codes written and also ensures that adequate security measures are taken to protect valuable data used in the app by unauthorized external agents.

Personal Attributes: Personal Attributes: This job requires the individual to have good analytical and problem solving Skills, flair of designing/structuring activities and comfort with working on computers.

Qualifications Pack for Telecom Terminal Equipment Applications (Native Application)

Job Details	Qualifications Pack Code	TEL/Q2301		
	Job Role	Telecom Terminal Equipment Applications (Native Application)		
	Credits (NSQF) [OPTIONAL]	TBD	Version number	1.0
	Sector	Telecom	Drafted on	23-06-2014
	Sub-sector	Application Development	Last reviewed on	24-06-2014
	Occupation	Native Application Developer	Next review date	26-12-2016
	NSQF Clearance on	20-07-2015		

Job Role	Customer Premises Equipment
Role Description	Native Application Developer is responsible for interpreting the business logic required to create a Phone Mobile Phone Application, Creating User Interface, Writing Business logics for events and actions, processing data and information, testing the application and publishing application.
NSQF level	4
Minimum Educational Qualifications Maximum Educational Qualifications	Preferably 10 th
Training	Knowledge of mobile phone App would be added advantage.
Minimum Entry Job Age	18 Years
Experience	NIL
Applicable National Occupational Standards (NOS)	(Click to open the below hyperlinks) Compulsory: 1. TEL/ N2304 (Programming in HTML5 with JavaScript and CSS3) 2. TEL/ N2305(Developing Native Apps Using HTML5 and JavaScript) 3. TEL/ N2306 (Testing and Publishing Phone Applications)
Performance Criteria	As described in the relevant OS units

Qualifications Pack for Telecom Terminal Equipment Applications (Native Application)

Definitions

Keywords /Terms	Description
Sector	Sector is a conglomeration of different business operations having similar businesses and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
Sub-sector	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
Occupation	Occupation is a set of job roles, which perform similar/related set of functions in an industry.
Function	Function is an activity necessary for achieving the key purpose of the sector, occupation, or area of work, which can be carried out by a person or a group of persons. Functions are identified through functional analysis and form the basis of OS.
Job Role	Job role defines a unique set of functions that together form a unique employment opportunity in an organization.
OS	OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the knowledge and understanding they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria	Performance Criteria are statements that together specify the standard of performance required when carrying out a task.
NOS	NOS are Occupational Standards which apply uniquely in the Indian context.
Qualifications Pack Code	Qualifications Pack Code is a unique reference code that identifies a qualifications pack.
Qualifications Pack	Qualifications Pack comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A Qualifications Pack is assigned a unique qualification pack code.
Unit Code	Unit Code is a unique identifier for an Occupational Standard , which is denoted by an 'N'.
Unit Title	Unit Title gives a clear overall statement about what the incumbent should be able to do.
Description	Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for.
Knowledge and Understanding	Knowledge and Understanding are statements which together specify the technical, generic, professional and organizational specific knowledge that an individual needs in order to perform to the required standard.
Organizational Context	Organizational Context includes the way the organization is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
Technical Knowledge	Technical Knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
Core Skills or Generic Skills	Core Skills or Generic Skills are a group of skills that are key to learning and working in today's world. These skills are typically needed in any work environment. In the context of the OS , these include communication related skills that are applicable to most job roles.

Qualifications Pack for Telecom Terminal Equipment Applications (Native Application)

Acronyms

Keywords /Terms	Description
VS	Visual Studio
IDE	Integrated Development Environment
SDK	Standard Development Kit
HTML	Hyper Text Markup Language
CSS	Cascading Style Sheets
DOM	Document Object Model
JSON	JavaScript Object Notation
UI	User Interface
API	Application Programming Interface
SQL	Standard Query Language
SMS	Short Message Services
VAS	Value Added Services
SHE	Safety Health & Environment
OHS	Operational Health & Safety

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National Occupational Standard



Overview

This unit is about basic Implementation of HTML scripting language, manipulate document structures and objects ,Implement program flow , Access and secure data in HTML. The unit also highlights use of CSS3 in application development and usingJava Script for developing applications

TEL/N2304

Programming in HTML5 with JavaScript

National Occupational Standard

Unit Code	TEL/N2304
Unit Title (Task)	Programming in HTML5 with JavaScript and CSS3
Description	This unit is about programming HTML5 and developing CSS applications
Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> Essentials of HTML, CSS and Java Script Implement and manipulate document structures and objects Implement program flow Access and secure data Use CSS3 in applications Using Java Script in Application Development
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Implement and manipulate document structures and objects	<p>To be competent, the user/individual on the job must be able to</p> <p>PC1. Create the document structure using HTML tags((Section, Article, Nav, Header, Footer, and Aside and other tags)</p> <p>PC2. Working with UI elements. Programmatically add and modify HTML elements; implement media controls.implement HTML5 canvas and SVG graphics</p> <p>PC3. Implement HTML5 APIs</p> <p>PC4. Establish the scope of objects and variables</p> <p>PC5. Create and implement objects and methods</p>
Implement program flow	<p>PC6. Working with Control Statements</p> <p>PC7. Handle common events exposed by DOM</p> <p>PC8. Implement exception handling</p> <p>PC9. Implement a callback</p> <p>PC10. Create a web worker process</p>
Access and secure data	<p>PC11. Validate user input by using HTML5 elements</p> <p>PC12. Validate user input by using JavaScript</p> <p>PC13. Consume JSON and XML data</p> <p>PC14. Serialize, deserialize, and transmit data</p>
Use CSS3 in Application Development	<p>PC15. Style HTML text properties, box properties</p> <p>PC16. Create a flexible content layout & animated and adaptive UI</p> <p>PC17. Find elements by using CSS selectors and jQuery</p> <p>PC18. Structure a CSS file by using CSS selectors</p>
Using Java Script and advanced operations in Application	<p>PC19. Creating Objects and Methods by Using JavaScript</p> <p>PC20. Refining Code for Maintainability and Extensibility</p> <p>PC21. Creating Interactive Pages using HTML5 APIs</p>

TEL/N2304

Programming in HTML5 with JavaScript

Development	<p>PC22. Adding Offline Support to Web Applications</p> <p>PC23. Implementing an Adaptive User Interface</p> <p>PC24. Implementing Generics</p> <p>PC25. Working with Advanced Graphics and Animating User Interface Elements</p> <p>PC26. Implementing Real-Time Communications by Using Web Sockets</p>
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and its processes)	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. Project Management concepts and applications</p> <p>KA2. Risk and impact of not following defined procedures/work instructions</p> <p>KA3. Escalation matrix for reporting identified incidents, troubles and/ or emergencies e.g. system failures ,fire and power failures</p> <p>KA4. records to be maintained and implications of non-maintenance of the same</p> <p>KA5. SHE and OHS guidelines and regulations as per company's norms</p>
B. Technical Knowledge	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. Knowledge of any programming language would be added advantage</p>
Skills (S)	
A. Core Skills/ Generic Skills	Basic Reading & Writing Skills
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. fill up appropriate technical forms, activity logs in required format of the company</p> <p>SA2. maintain proper records as per given format</p> <p>SA3. read and understand manuals, work orders, health and safety instructions, memos, reports etc.</p>
	Communication Skills
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA4. courteous to the customers</p> <p>SA5. Liaisoning and coordination skills</p> <p>SA6. communicate with supervisor and peers</p> <p>SA7. communicate in the local language (preferable)</p>
B. Professional Skills	IDE installation/Task Management Skills
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB1. install Native Application Development suite/tools</p> <p>SB2. Configurae the Native Application Suite/Tools for Application Development</p> <p>SB3. Install and Set up Emulator</p> <p>SB4. Work systematically with required attention to detail and adherence to all safety requirements</p>
	Technical Skills

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Programming in HTML5 with JavaScript

	<p>The user/individual on the job needs to know and understand how to:</p> <ul style="list-style-type: none">SB5. Read and comprehend/understand equipment installation and configuration manualSB6. Interpreting Application RequirementsSB7. Interpreting UI requirementsSB8. Interpreting application logic/control flow
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NOS Version Control

NOS Code	TEL /N2304		
Credits(NSQF) [OPTIONAL]	TBD	Version number	1.0
Industry	Telecom	Drafted on	23-06-2014
Industry Sub-sector	Native Application Development	Last reviewed on	24-06-2014
		Next review date	26-12-2016



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TEL/N2305 Developing Native Apps Using HTML5 and JavaScript

National Occupational Standard



Overview

This unit is about setting up Native Application Development tools/suite , Developing basic and VAS Native Applications Using HTML5 and JavaScript for various Mobile operating systems.

TEL/N2305 Developing Native Apps Using HTML5 and JavaScript

National Occupational Standard

Unit Code	TEL/N2305
Unit Title (Task)	Developing Native Apps Using HTML5 and JavaScript
Description	<p>Involves in working with user Interface components and building phone Apps. This include</p> <ul style="list-style-type: none"> • Essentials of Native Application platform and features, Tools • Installation of Native Application Platform Suite/Toolkit and configuration • Installation of Emulators and other application support tools • Essentials of various app User interface • Create the user interface (UI) layout and structure for an Application • Using templates to create the UI • Use data binding to present data in the UI • Handle files, streams, Data structures and Database • Design and implement Process Lifetime Management (PLM) • Handle navigation scenarios in a Windows Store app • Implement Platform (OS) specific features • Respond to mouse, keyboard, and touch events, including gestures • Create VAS Applications
Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> • Essentials of Native Application platform Suite/ Tools and Configuration • Principles and components of UI Design, Layouts and controls • Handling Data, Files , Streams and database operations • Process Lifetime Management and Navigation in a App • Developing VAS Applications
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Essentials of Native Application platform Suite/ Tools and Configuration	<p>To be competent, the user/individual on the job must be able to</p> <p>PC1. Indetify various Native Application Development tools/suite available from difirent vendors, features and benefits.</p> <p>PC2. Installation of Native Application suite/tools and make necessary configuration for app ready platform.</p> <p>PC3. Setting up the Emulator</p>
Principles and components of UI Design, Layouts and	<p>PC4. Ideate and formulate a theme of User Interface and navigation flow</p> <p>PC5. Exploring the Native Application Development Platform and features. Knowing the features of various Mobile OS platforms.</p>

TEL/N2305 Developing Native Apps Using HTML5 and JavaScript

controls	PC6. Creating Layout Controls and Templates for user interface design PC7. Working with Controls specific to OS platforms PC8. Implementing Tiles, Live Tiles, Secondary Tiles, and Badge Notifications and Implementing Toast Notifications for Window Platform PC7. Implementing Other iOS specific and Android Specific interfaces design. PC8. Responding to Mouse and Touch and other actions
Handling Files and Data	PC9. Designing and Implementing a Data Access Strategy PC10. Handling Files and Streams for Apps and Working with File User Interface Components PC11. Writing Data to the Notes File and Reading Data from the Notes File PC12. Working with SQL lite
Process Lifetime Management and Navigation in a App	PC13. Explore the Different PLM States PC14. Implement State Management PC15. Handling Navigation in Store Apps PC16. Semantic Zoom for windows platform PC17. Working on specific features of Android and iOS
Developing VAS Applications	PC21. Working with Network components and Controls, GPRS Based Apps PC22. Working with Mail
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and its processes)	The user/individual on the job needs to know and understand: KA6. Project Management concepts and applications KA7. Risk and impact of not following defined procedures/work instructions KA8. Escalation matrix for reporting identified incidents, troubles and/ or emergencies e.g. system failures ,fire and power failures KA9. records to be maintained and implications of non-maintenance of the same KA10. SHE and OHS guidelines and regulations as per company's norms
B. Technical Knowledge	The user/individual on the job needs to know and understand: KB2. Knowledge of any HTML, CSS, Java Script programming language KB3. Knowledge of UI design fundamentals
Skills (S)	
A. Core Skills/ Generic Skills	Basic Reading & Writing Skills
	The user/ individual on the job needs to know and understand how to: SA1. fill up appropriate technical forms, activity logs in required format of the company SA2. maintain proper records as per given format SA3. read and understand manuals, work orders, health and safety instructions, memos, reports etc.
	Communication Skills

TEL/N2305 Developing Native Apps Using HTML5 and JavaScript

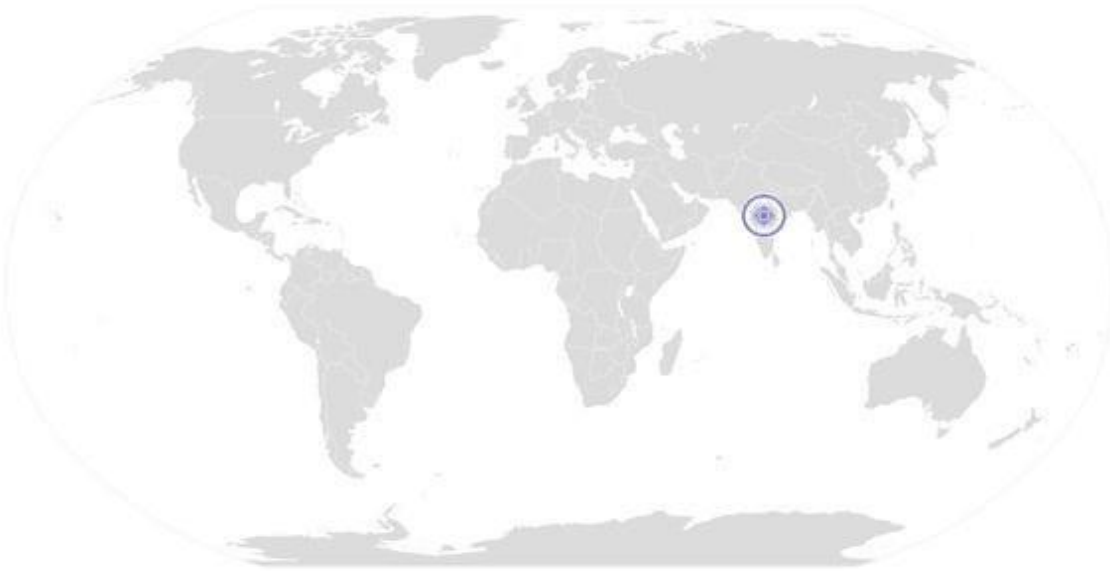
	<p>The user/ individual on the job needs to know and understand how to:</p> <ul style="list-style-type: none"> SA4. courteous to the customers SA5. Liaisoning and coordination skills SA6. communicate with supervisor and peers SA7. communicate in the local language (preferable)
<p>B. Professional Skills</p>	<p>IDE installation/Task Management Skills</p> <p>The user/individual on the job needs to know and understand how to:</p> <ul style="list-style-type: none"> SB1. install Native Application Development suite/tools SB2. Configurae the Native Application Suite/Tools for Application Development SB3. Install and Set up Emulator SB4. Work systematically with required attention to detail and adherence to all safety requirements
	<p>Technical Skills</p>
	<p>The user/individual on the job needs to know and understand how to:</p> <ul style="list-style-type: none"> SB5. Read and comprehend/understand equipment installation manual SB6. Interpreting Application Requirements SB7. Interpreting UI requirements



TEL/N2305 Developing Native Apps Using HTML5 and JavaScript

NOS Version Control

NOS Code	TEL /N2305		
Credits(NSQF) [OPTIONAL]	TBD	Version number	1.0
Industry	Telecom	Drafted on	23-06-2014
Industry Sub-sector	Applocation Development	Last reviewed on	24-06-2014
		Next review date	26-12-2016



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National Occupational Standard



Overview

This unit is about Testing and Publishing Native Phone Applications

Testing and Publishing Native Phone Applications

Unit Code	TEL/N2306
Unit Title (Task)	Testing and Publishing Native Phone Applications
Description	This unit is about Creating Applications for various platform specific Phone Applications
Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> • Application Testing • Securing Phone Applications • Application configuration, Publishing Phone Applications in various OS specific app stores
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Phone Application Testing	<p>To be competent, the user/individual on the job must be able to</p> <p>PC1. Testing fundamentals, Types of Testing</p> <p>PC2. Testing Phone Application using Unit Testing</p> <p>PC3. Functional /Usability Testing Windows Phone Applications</p> <p>PC4. UI Testing</p> <p>PC5. Performance Testing</p> <p>PC6. Localization issues & Battery Impact</p>
Securing Phone Applications	<p>PC7. Application Security Testing</p> <p>PC8. Security Best Practices for VAS Applications</p>
Application configuration, Publishing Phone Applications in various OS specific app stores	<p>PC9. Configuration options in the App Manifest file</p> <p>PC10. App Certification</p> <p>PC11. Enterprise App Deployment across various platforms</p>
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. Project Management concepts and applications</p> <p>KA2. risk and impact of not following defined procedures/work instructions</p> <p>KA3. escalation matrix for reporting identified incidents, troubles and/ or emergencies e.g. system failures ,fire and power failures</p> <p>KA4. records to be maintained and implications of non-maintenance of the same</p>

TEL/N2306

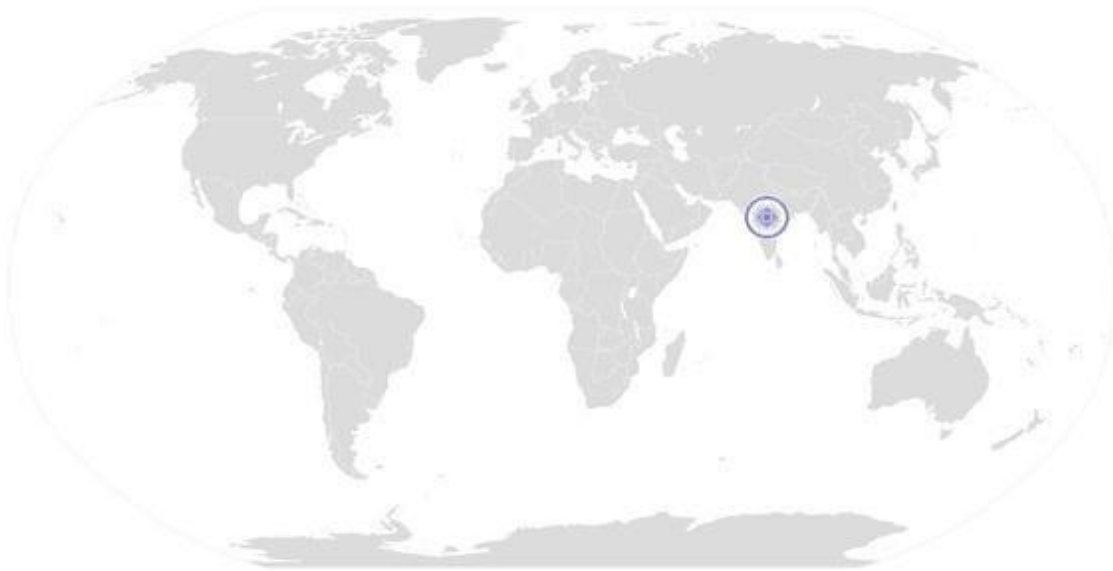
Testing and Publishing Native Phone Applications

its processes)	KA5. SHE and OHS guidelines and regulations as per company's norms
B. Technical Knowledge	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. Object Oriented Programming</p> <p>KB2. Native Application kit</p> <p>KB3. Testing essentials and use of testing tools and concepts</p>
Skills (S)	
A. Core Skills/ Generic Skills	Basic Reading & Writing Skills
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. fill up appropriate technical forms, activity logs in required format of the company</p> <p>SA2. maintain proper records as per given format</p> <p>SA3. read and understand manuals, work orders, health and safety instructions, memos, reports etc.</p>
	Communication Skills
B. Professional Skills	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA4. courteous to the customers</p> <p>SA5. Liaisoning and coordination skills</p> <p>SA6. communicate with supervisor and peers</p>
	IDE installation/Task Management Skills
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB1. install Native Application Development suite/tools</p> <p>SB2. Configurae the Native Application Suite/Tools for Application Development</p> <p>SB3. Install and Set up Emulator</p> <p>SB4. Work systematically with required attention to detail and adherence to all safety requirements</p>
	Technical Skills
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB5. Read and comprehend/understand equipment installation manual</p> <p>SB6. Interpreting Application Requirements visa vis the the application for test</p> <p>SB7. Interpreting testing requirements</p>
	Basic Reading & Writing Skills
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA7. fill up appropriate technical forms, activity logs in required format of the company</p> <p>SA8. maintain proper records as per given format</p> <p>SA9. read and understand manuals, work orders, health and safety instructions, memos, reports etc.</p>

TEL/N2306

Testing and Publishing Native Phone Applications

NOS Code	TEL /N2306		
Credits(NSQF) [OPTIONAL]	TBD	Version number	1.0
Industry	Telecom	Drafted on	23-06-2014
Industry Sub-sector	Applocation Development	Last reviewed on	24-06-2014
		Next review date	26-12-2016



PERFORMANCE CRITERIA

Job Role : Telecom Terminal Equipment Application Developer- Native
Qualification Pack : TEL/Q2301
Sector Skill Council : Telecom

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC.
2. The assessment for the theory part will be based on knowledge bank of questions created by the SSC.
3. Individual assessment agencies will create unique question papers for theory and skill practical part for each candidate at each examination/training center.
4. To pass the Qualification Pack, every trainee should score a minimum of 40% in every NOS and overall 50% Pass percentage
6. In case of successfully passing only certain number of NOS's, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack.

		Total Mark (300)	Out Of	Theory	Skills Practical
TEL/N2304 Implement and manipulate document structures and objects	PC1. create the document structure using HTML tags((Section, Article, Nav, Header, Footer, and Aside and other tags)	100	10	4	6
	PC2. Working with UI elements. Programmatically add and modify HTML elements; implement media controls. Implement HTML5 canvas and SVG graphics		10	4	6
	PC3. implement HTML5 APIs		6	2	4
	PC4. Establish the scope of objects and variables		6	2	4
	PC5. create and implement objects and methods		4	2	2
Implement program flow	PC6. working with Control Statements		4	2	2
	PC7. Handle common events exposed by DOM		4	2	2
	PC8. implement exception handling		4	2	2
	PC9. implement a callback		4	2	2
	PC10. create a web worker process		4	2	2
Access and secure data	PC11. Validate user input by using HTML5 elements	4	2	2	
	PC12. validate user input by using JavaScript	4	2	2	
	PC13. consume JSON and XML data	4	2	2	
	PC14. serialize, de-serialize, and transmit data	4	2	2	
Use CSS3 in Application Development	PC15. style HTML text properties, box properties	4	2	2	
	PC16. Create a flexible content layout & animated and adaptive UI	4	2	2	
	PC17. find elements by using CSS selectors and jQuery	2	1	1	
	PC18. structure a CSS file by using CSS selectors	2	1	1	
Using Java Script and advanced operations in Application Development	PC19. Creating Objects and Methods by Using JavaScript	2	1	1	
	PC20. Refining Code for Maintainability and Extensibility	2	1	1	
	PC21. Creating Interactive Pages using HTML5 APIs	2	1	1	
	PC22. Adding Offline Support to Web Applications	2	1	1	
	PC23. implementing an Adaptive User Interface	2	1	1	
	PC24. implementing Generics	2	1	1	
	PC25. Working with Advanced Graphics and Animating User Interface Elements	2	1	1	
	PC26. implementing Real-Time Communications by Using Web Sockets	2	1	1	
TEL/N2305 Essentials of Native Application platform Suite/ Tools and Configuration	PC1. Identify various Native Application Development tools/suite available from different vendors, features and benefits.	6	6	0	
	PC2. Installation of Native Application suite/tools and make necessary configuration for app ready platform.	6	2	4	
	PC3. setting up the Emulator	2	0	2	
Principles and components of UI Design, Layouts and controls	PC4. ideate and formulate a theme of User Interface and navigation flow	4	4	0	
	PC5. Exploring the Native Application Development Platform and features. Knowing the features of various Mobile OS platforms.	8	2	6	
	PC6. Creating Layout Controls and Templates for user interface design	8	2	6	
	PC7. Implementing Other iOS specific and Android Specific interfaces design.	4	2	2	
	PC8. responding to Mouse and Touch and other actions	6	2	4	
Handling Files and Data	PC9. designing and Implementing a Data Access Strategy	6	2	4	
	PC10. handling Files and Streams for Apps and Working with File User Interface Components	6	2	4	
	PC11. Writing Data to the Notes File and Reading Data from the Notes File	6	2	4	
	PC12. working with SQL lite	4	0	4	
Process Lifetime Management and Navigation in a App	PC13. Explore the Different PLM States	2	2	0	
	PC14. Implement State Management	2	2	0	
	PC15. handling Navigation in Store Apps	2	0	2	
	PC16. semantic Zoom for windows platform	6	2	4	
	PC17. working on specific features of Android and iOS	6	2	4	
TEL/N2306 Phone Application Testing	PC1. test fundamentals and understand types of testing	15	15	0	
	PC2. test phone application using unit testing	15	10	5	
	PC3. carry out functional/usability test of applications	15	5	10	
	PC4. carry out UI Testing	15	8	7	
	PC5. carry out performance testing	5	3	5	
	PC6. localization issues & battery impact analysis	5	2	3	
Securing Phone Applications	PC7. application security testing	5	2	3	
	PC8. security best practices for VAS applications	5	2	3	
Application configuration, Publishing Phone Applications in various OS specific app stores	PC9. configuration options in the App manifest file	5	2	3	
	PC10. App Certification	5	3	3	
	PC11. enterprise App Deployment across various platforms	10	3	3	