

## 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

**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:** 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)           | TBD                                                          | Version number   | 1.0        |
|             | Sector                   | Telecom                                                      | Drafted on       | 23-06-2014 |
|             | Sub-sector               | Application Development                                      | Last reviewed on | 21-06-2018 |
|             | Occupation               | Native Application Developer                                 | Next review date | 26-03-2019 |
|             | NSQC Clearance on        | 20/07/2015                                                   |                  |            |

| Job Role                                         | Telecom Terminal Equipment Applications (Native Applications)                                                                                                                                                                                                                                                                    |
|--------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Role Description                                 | Native Application Developer is responsible for interpreting the business logic required to create a 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               | Preferably 10 <sup>th</sup>                                                                                                                                                                                                                                                                                                      |
| Maximum Educational Qualifications               |                                                                                                                                                                                                                                                                                                                                  |
| Training                                         | Knowledge of mobile phone App would be added advantage.                                                                                                                                                                                                                                                                          |
| Minimum Entry Job Age                            | 18 Years                                                                                                                                                                                                                                                                                                                         |
| Experience                                       | NIL                                                                                                                                                                                                                                                                                                                              |
| Applicable National Occupational Standards (NOS) | <b>Compulsory:</b> <ol style="list-style-type: none"> <li>1. <a href="#">TEL/ N2304 (Programming in HTML5 with JavaScript and CSS3)</a></li> <li>2. <a href="#">TEL/ N2305( Developing Native Apps Using HTML5 and JavaScript)</a></li> <li>3. <a href="#">TEL/ N2306 (Testing and Publishing Phone Applications)</a></li> </ol> |
| 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.          |

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 using Java Script for developing applications

TEL/N2304

## Programming in HTML5 with JavaScript

National Occupational Standard

|                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Unit Code</b>                                                | <b>TEL/N2304</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Unit Title (Task)</b>                                        | <b>Programming in HTML5 with JavaScript and CSS3</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Description</b>                                              | This unit is about programming HTML5 and developing CSS applications                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Scope</b>                                                    | <p>This unit/task covers the following:</p> <ul style="list-style-type: none"> <li>Essentials of HTML, CSS and Java Script</li> <li>Implement and manipulate document structures and objects</li> <li>Implement program flow</li> <li>Access and secure data</li> <li>Use CSS3 in applications</li> <li>Using Java Script in Application Development</li> </ul>                                                                                                                                         |
| <b>Performance Criteria(PC) w.r.t. the Scope</b>                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Element</b>                                                  | <b>Performance Criteria</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Implement and manipulate document structures and objects</b> | <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> |
| <b>Implement program flow</b>                                   | <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>                                                                                                                                                                                                                                                                                          |
| <b>Access and secure data</b>                                   | <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>                                                                                                                                                                                                                                                                                             |
| <b>Use CSS3 in Application Development</b>                      | <p>PC15. Style HTML text properties, box properties</p> <p>PC16. Create a flexible content layout &amp; 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>                                                                                                                                                                                                                                              |
| <b>Using Java Script and advanced operations in Application</b> | <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

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|-------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Development</b>                                                                              | <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>                                                                                                                                                                                                                  |
| <b>Knowledge and Understanding (K)</b>                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>A. Organizational Context</b><br>(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>B. Technical Knowledge</b>                                                                   | <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>                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Skills (S)</b>                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>A. Core Skills/ Generic Skills</b>                                                           | <b>Basic Reading &amp; Writing Skills</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                                                                                 | <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>                                                                                                                                                                             |
|                                                                                                 | <b>Communication Skills</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                                                                                                 | <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>B. Professional Skills</b>                                                                   | <b>IDE installation/Task Management Skills</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|                                                                                                 | <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>                                                                                                                                         |
|                                                                                                 | <b>Technical Skills</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

TEL/N2304

## Programming in HTML5 with JavaScript

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|  | <p>The user/individual on the job needs to know and understand how to:</p> <p>SB5. Read and comprehend/understand equipment installation and configuration manual</p> <p>SB6. Interpreting Application Requirements</p> <p>SB7. Interpreting UI requirements</p> <p>SB8. Interpreting application logic/control flow</p> |
|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



TEL/N2304

Programming in HTML5 with JavaScript

## NOS Version Control

|                     |                                          |                  |            |
|---------------------|------------------------------------------|------------------|------------|
| NOS Code            | TEL/N2304                                |                  |            |
| Credits(NSQF)       | TBD                                      | Version number   | 1.0        |
| Industry            | Telecom                                  | Drafted on       | 23-06-2014 |
| Industry Sub-sector | Handset                                  | Last reviewed on | 21-06-2018 |
| Occupation          | Terminal Equipment Application Developer | Next review date | 31-03-2019 |



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TEL/N2305      Developing Native Apps Using HTML5 and JavaScript

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# 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

|                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Unit Code</b>                                                                | <b>TEL/N2305</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Unit Title (Task)</b>                                                        | <b>Developing Native Apps Using HTML5 and JavaScript</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Description</b>                                                              | <p>Involves in working with user Interface components and building phone Apps. This include</p> <ul style="list-style-type: none"> <li>• Essentials of Native Application platform and features, Tools</li> <li>• Installation of Native Application Platform Suite/Toolkit and configuration</li> <li>• Installation of Emulators and other application support tools</li> <li>• Essentials of various app User interface</li> <li>• Create the user interface (UI) layout and structure for an Application</li> <li>• Using templates to create the UI</li> <li>• Use data binding to present data in the UI</li> <li>• Handle files, streams, Data structures and Database</li> <li>• Design and implement Process Lifetime Management (PLM)</li> <li>• Handle navigation scenarios in a Windows Store app</li> <li>• Implement Platform (OS) specific features</li> <li>• Respond to mouse, keyboard, and touch events, including gestures</li> <li>• Create VAS Applications</li> </ul> |
| <b>Scope</b>                                                                    | <p>This unit/task covers the following:</p> <ul style="list-style-type: none"> <li>• Essentials of Native Application platform Suite/ Tools and Configuration</li> <li>• Principles and components of UI Design, Layouts and controls</li> <li>• Handling Data, Files , Streams and database operations</li> <li>• Process Lifetime Management and Navigation in a App</li> <li>• Developing VAS Applications</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Performance Criteria(PC) w.r.t. the Scope</b>                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Element</b>                                                                  | <b>Performance Criteria</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Essentials of Native Application platform Suite/ Tools and Configuration</b> | <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>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Principles and components of UI Design, Layouts and</b>                      | <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

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

**TEL/N2305      Developing Native Apps Using HTML5 and JavaScript**

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|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                               | <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>B. Professional Skills</b> | <p><b>IDE installation/Task Management Skills</b></p> <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. Configure 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> |
|                               | <p><b>Technical Skills</b></p> <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</p> <p>SB7. Interpreting UI requirements</p>                                                                                                                                                           |
|                               |                                                                                                                                                                                                                                                                                                                                                                                                                                         |



## TEL/N2305      Developing Native Apps Using HTML5 and JavaScript

### NOS Version Control

|                     |                                          |                  |            |
|---------------------|------------------------------------------|------------------|------------|
| NOS Code            | TEL /N2305                               |                  |            |
| Credits(NSQF)       | TBD                                      | Version number   | 1.0        |
| Industry            | Telecom                                  | Drafted on       | 23-06-2014 |
| Industry Sub-sector | Handset                                  | Last reviewed on | 21-06-2018 |
| Occupation          | Terminal Equipment Application Developer | Next review date | 31-03-2019 |



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# National Occupational Standard



## Overview

This unit is about Testing and Publishing Native Phone Applications

TEL/N2306

## Testing and Publishing Native Phone Applications

National Occupational Standard

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|---------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Unit Code</b>                                                                                  | <b>TEL/N2306</b>                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Unit Title (Task)</b>                                                                          | <b>Testing and Publishing Native Phone Applications</b>                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Description</b>                                                                                | This unit is about Creating Applications for various platform specific Phone Applications                                                                                                                                                                                                                                                                                                                                                        |
| <b>Scope</b>                                                                                      | <p>This unit/task covers the following:</p> <ul style="list-style-type: none"> <li>• Application Testing</li> <li>• Securing Phone Applications</li> <li>• Application configuration, Publishing Phone Applications in various OS specific app stores</li> </ul>                                                                                                                                                                                 |
| <b>Performance Criteria(PC) w.r.t. the Scope</b>                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Element</b>                                                                                    | <b>Performance Criteria</b>                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Phone Application Testing</b>                                                                  | <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 &amp; Battery Impact</p>                                                                              |
| <b>Securing Phone Applications</b>                                                                | <p>PC7. Application Security Testing</p> <p>PC8. Security Best Practices for VAS Applications</p>                                                                                                                                                                                                                                                                                                                                                |
| <b>Application configuration, Publishing Phone Applications in various OS specific app stores</b> | <p>PC9. Configuration options in the App Manifest file</p> <p>PC10. App Certification</p> <p>PC11. Enterprise App Deployment across various platforms</p>                                                                                                                                                                                                                                                                                        |
| <b>Knowledge and Understanding (K)</b>                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>A. Organizational Context</b><br>(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>B. Technical Knowledge</b>         | <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>                                                                                                                                                                |
| <b>Skills (S)</b>                     |                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>A. Core Skills/ Generic Skills</b> | <b>Basic Reading &amp; Writing Skills</b>                                                                                                                                                                                                                                                                                                                                          |
|                                       | <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>                                     |
|                                       | <b>Communication Skills</b>                                                                                                                                                                                                                                                                                                                                                        |
|                                       | <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>                                                                                                                                                                |
| <b>B. Professional Skills</b>         | <b>IDE installation/Task ManagementSkills</b>                                                                                                                                                                                                                                                                                                                                      |
|                                       | <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> |
|                                       | <b>Technical Skills</b>                                                                                                                                                                                                                                                                                                                                                            |
|                                       | <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>                                                                                          |
|                                       | <b>Basic Reading &amp; Writing Skills</b>                                                                                                                                                                                                                                                                                                                                          |
|                                       | <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>                                     |

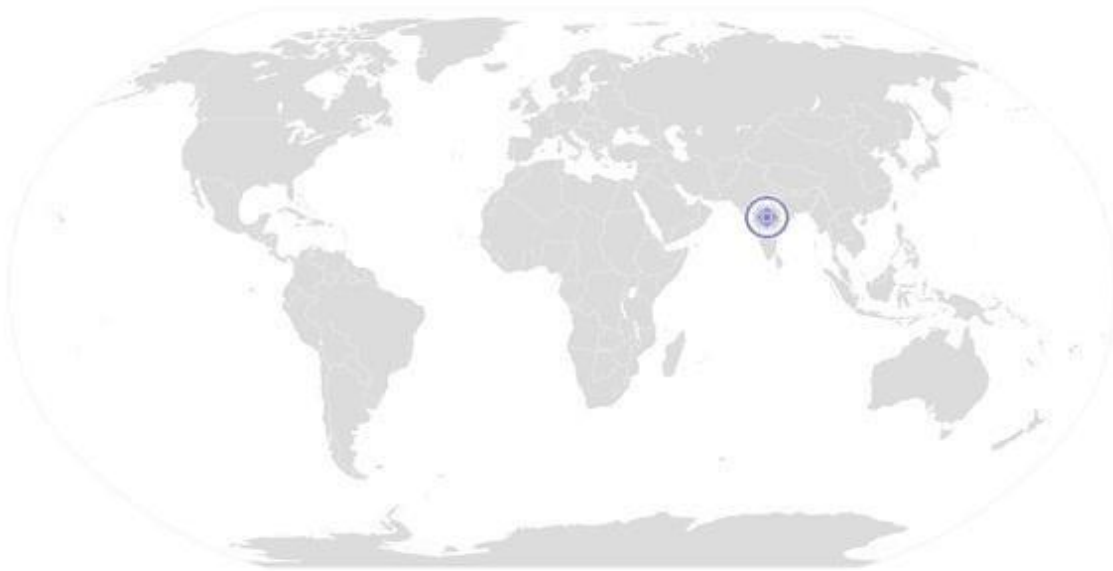


TEL/N2306

## Testing and Publishing Native Phone Applications

### NOS Version Control

|                     |                                          |                  |            |
|---------------------|------------------------------------------|------------------|------------|
| NOS Code            | TEL/N2306                                |                  |            |
| Credits(NSQF)       | TBD                                      | Version number   | 1.0        |
| Industry            | Telecom                                  | Drafted on       | 23-06-2014 |
| Industry Sub-sector | Handset                                  | Last reviewed on | 21-06-2018 |
| Occupation          | Terminal Equipment Application Developer | Next review date | 31-03-2019 |



**Criteria For Assessment of Trainees**

**Job Role** : Telecom Terminal Equipment Application (Native Applications)  
**Qualification Pack** : TEL/Q2301  
**Sector Skill Council** : Telecom

**Guidelines for Assessment**

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. Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/option NOS/set of NOS.
- 4a. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below).
- 4b. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training center based on this criterion.
5. To pass the Qualification Pack , every trainee should score a minimum of 70% of aggregate marks to successfully clear the assessment.
6. In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack.

| Assessment Outcome                                                                         | Assessment Criteria                                                                                                                             | Total Mark (300) | Out Of | Theory | Skills Practical |
|--------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|------------------|--------|--------|------------------|
| TEL/N2304<br>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<br>Essentials of Native Application platform Suite/ Tools and Configuration      | PC1. Identify various Native Application Development tools/suite available from different vendors, features and benefits.                       | 100              | 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                               |                                                                                                                                                 |                  | 4      | 4      | 0                |
|                                                                                            | PC4. ideate and formulate a theme of User Interface and navigation flow                                                                         |                  | 4      | 2      | 2                |
|                                                                                            | 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                                                                    |                                                                                                                                                 |                  | 6      | 2      | 4                |
|                                                                                            | 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                                                                       |                  | 4      | 0      | 4                |
|                                                                                            | PC12. working with SQL lite                                                                                                                     |                  | 2      | 2      | 0                |
| Process Lifetime Management and Navigation in a App                                        | PC13. Explore the Different PLM States                                                                                                          |                  | 2      | 0      | 2                |
|                                                                                            | 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                |
|                                                                                            |                                                                                                                                                 |                  | 4      | 2      | 2                |
| TEL/N2306<br>Phone Application Testing                                                     | PC1. test fundamentals and understand types of testing                                                                                          | 100              | 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                |
|                                                                                            | PC7. application security testing                                                                                                               |                  | 5      | 2      | 3                |
| Securing Phone Applications                                                                | 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                |
|                                                                                            |                                                                                                                                                 |                  |        |        |                  |