# Model Curriculum

## Telecom Terminal Equipment Application Developer (Android)

**SECTOR:** TELECOM
**SUB-SECTOR:** HANDSET (TERMINAL APPLICATIONS)
**OCCUPATION:** TERMINAL EQUIPMENT APPLICATION DEVELOPER
**REF ID:** TEL/Q2300,V1.0
**NSQF LEVEL:** 4

Skill India

Telecom Sector Skill Council

N·S·D·C National Skill Development Corporation
Transforming the skill landscape

# Certificate

## COMPLIANCE TO QUALIFICATION PACK – NATIONAL OCCUPATIONAL STANDARDS

is hereby issued by the

**TELECOM SECTOR SKILL COUNCIL**

for

## MODEL CURRICULUM

Complying to National Occupational Standards of
Job Role/ Qualification Pack: 'Telecom Terminal Equipment Application Developer (Android)'
QP No. TEL/Q2300 NSQF - Level 4

Date of Issuance: **May 15th, 2016**

Valid up to*: **May 15th, 2018**

**Valid up to the next review date of the Qualification Pack or the 'Valid up to' date mentioned above (whichever is earlier)*

Authorised Signatory
(Telecom Sector Skill Council)

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# Telecom Terminal Equipment Application Developer (Android)

## CURRICULUM / SYLLABUS

This program is aimed at training candidates for the job of a "Telecom Terminal Equipment Application Developer (Android) ", in the "Telecom" Sector/Industry and aims at building the following key competencies amongst the learner

| | | | |
|---|---|---|---|
| **Program Name** | **Telecom Terminal Equipment Application Developer ( Android)** | | |
| **Qualification Pack Name & Reference ID. ID** | TEL/Q2300,Version 1.0 | | |
| **Version No.** | 1.0 | **Version Update Date** | 12 – 08 – 2018 |
| **Pre-requisites to Training** | Practical Knowledge of Java programming | | |
| **Training Outcomes** | **After completing this programme, participants will be able to:**<br>• Learn how to Set –up Android Framework<br>• Learn how to set –up of development environment<br>• Understand how to create User Interface<br>• Learn how to develop Android VAS application<br>• Conduct Testing and publishing of Android application | | |

This course encompasses 3 out of 3 National Occupational Standards (NOS) of "Telecom Terminal Equipment Application Developer ( Android) " Qualification Pack issued by "TSSC: Telecom Sector Skills Council".

| Sr. No. | Module | Key Learning Outcomes | Equipment Required |
|---|---|---|---|
| 1 | **Introduction**<br><br>**Theory Duration**<br>(hh:mm)<br>10:00<br>**Practical Duration**<br>(hh:mm)<br>00:00<br><br>**Corresponding NOS Code**<br>NA | • State the objectives of the program and skills required for the job<br>• Describe the Mobile App eco-system, various platforms and development environments<br>• Make candidates aware of the opportunities in Mobile App development field<br>• Explain the relevance and advantages of App based business applications vis-à-vis traditional web-sites | NA |
| 2 | **Set up Android Framework/development environment and creating user interface**<br><br>**Theory Duration**<br>(hh:mm)<br>25:00<br>**Practical Duration**<br>(hh:mm)<br>60:00<br><br>**Corresponding NOS Code**<br>TEL/N2300 | • Understanding the Android Application Development Framework<br>• Setting up Android application development environment<br>• Creating Android Projects<br>• Understand Android Elements (Text, Image etc) and there properties<br>• Understand Layouts<br>• Develop interfaces<br>• Create Projects<br>• Candidate is expected to be able to create various types of UI's with all elements and layouts (4 to 5 practical assignments) | Computer Lab, Broadband, Various Smartphone (working with versions of Android) |
| 3 | **Developing Android VAS application**<br><br>**Theory Duration**<br>(hh:mm)<br>25:00<br><br>**Practical Duration**<br>(hh:mm)<br>60:00<br><br>**Corresponding NOS Code**<br>TEL/N2301 | • Understand handling of data<br>• Messaging and Networking<br>• Handle Location based services<br>• Developing Android Services<br>• Ensuring backward compatibility<br>• Learn the concept of Object oriented database<br>• Understand the fundamentals of Networking<br>• Candidate is expected to create functional Apps (4 to 5 practical assignments) | Computer Lab, Broadband, Various Smartphone (working with versions of Android) |
| 4 | **Testing and Publishing Android applications** | • Understand various application testing methodologies and associated processes | Computer Lab, Broadband, Various Smartphone |

| Sr. No. | Module | Key Learning Outcomes | Equipment Required |
|---|---|---|---|
| | **Theory Duration**<br>(hh:mm)<br>20:00<br><br>**Practical Duration**<br>(hh:mm)<br>50:00<br>**Corresponding NOS Code**<br>TEL/N2303 | of Android<br>• Learn how to secure android applications<br>• Learn the concept of debugging methodologies and re-testing process<br>• Learn the concept of compliance process/procedures and tests for hosting applications at app stores.<br>• Learn about the tools used for application functional and security testing<br>• Publishing Android applications<br>• Candidate is expected to know the entire process/procedure for publishing the App at the App Store | (working with versions of Android) |
| | **Total Duration**<br><br>**Theory Duration 80:00**<br><br>**Practical Duration 170:00** | **Unique Equipment Required:**<br>White/black board, Projection System with PC/Laptop Development Tools and Framework, sample smartphones (for app deployment & testing), Internet/Broadband connectivity | |

Grand Total Course Duration: 250 **Hours, 0 Minutes**

*(This syllabus/ curriculum has been approved by**TSSC: Telecom Sector Skill Council)***

## Trainer Prerequisites for Job role: "Telecom Terminal Equipment Application Developer (Android) " mapped to Qualification Pack: "TEL/Q2300, V. 1.0"

| Sr. No. | Area | Details |
|---|---|---|
| 1 | **Description** | To deliver accredited training service, mapping to the curriculum detailed above, in accordance with the Qualification Pack "TEL/Q2300, Version No. 1.0". |
| 2 | **Personal Attributes** | This job requires the individual to possess influencing and persuasion skills; excellent verbal and non-verbal communication skills; English & regional language proficiency; must be energetic and flexible and should have a pleasing personality. |
| 3 | **Minimum Educational Qualifications** | Preferably equivalent to Matriculation |
| 4a | **Domain Certification** | Certified for Job Role: "Telecom Terminal Equipment Application Developer (Android)" mapped to QP: "TEL/Q2300, Version No. 1.0". Minimum accepted score as per respective TSSC guidelines. |
| 4b | **Platform Certification** | Recommended that the Trainer is certified for the Job Role: "Trainer", mapped to the Qualification Pack: "TEL/Q2300, Version No. 1.0". Minimum accepted score as per respective TSSC guidelines. |
| 5 | **Experience** | • The trainer should be certified by TSSC as 'Train the Trainer' and Assessor<br>And<br>• Worked as Telecom Terminal Equipment Application Developer (Android) for a minimum of 6-8 months |

## Annexure: Assessment Criteria

| Assessment Criteria | |
|---|---|
| Job Role | Telecom Terminal Equipment Application Developer ( Android) |
| Qualification Pack | TEL/Q2300, V. 1.0 |
| Sector Skill Council | Telecom |

| Sr. No. | 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. TSSC 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 TSSC. |
| 3 | Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below) |
| 4 | To pass the Qualification Pack, every trainee should score overall of 70%. |
| 5 | 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. |

| Assessable Outcome | Assessment Criteria | Total Mark (300) | Out Of | Theory | Skills Practical |
|---|---|---|---|---|---|
| TEL/N2300 Understanding the Android Application Development Framework | PC1. differentiate various Mobile operating Systems , key features and benefits | 100 | 4 | 4 | 0 |
| | PC2. identify key features for various versions of Android | | 4 | 4 | 0 |
| | PC3. identify the various tools and software required for developing an Android Application | | 4 | 4 | 0 |
| Setting up Android Application Development Environment | PC4. install Java | | 6 | 3 | 3 |
| | PC5. install and configure Android development framework | | 3 | 1 | 2 |
| | PC6. create Android Virtual Devices | | 3 | 1 | 2 |
| | PC7. identify the components of an Android Project | | 3 | 2 | 1 |
| Creating Android Projects | PC8. create Android Project | | 4 | 3 | 1 |
| | PC9. identify and understand features of system libraries and files related to the installed framework | | 4 | 1 | 3 |
| Creating Android User Interface Elements | PC10. understand and link activities and intents | | 3 | 2 | 1 |
| | PC11. apply Styles and themes to activities | | 5 | 2 | 3 |
| | PC12. start activities using Intents | | 3 | 1 | 2 |
| | PC13. understand parent child activity relationship | | 3 | 1 | 2 |
| | PC14. understand the components of a Screen, Views and view Groups | | 7 | 3 | 4 |
| | PC15. understand Layouts | | 5 | 2 | 3 |
| | PC16. work with emulators | | 4 | 1 | 3 |
| | PC17. Understand Display orientation, views and sizing (for various devices) | | 5 | 2 | 3 |
| | PC18. Creating User Interfaces programmatically | | 4 | 1 | 3 |
| | PC19. Implement event listeners | | 3 | 1 | 2 |
| | PC20. Create Basic Views | | 5 | 1 | 4 |
| | PC21. display of images | | 5 | 2 | 3 |
| | PC22. Use Menus , Helper Methods, Options Menu and Context Menu | | 5 | 2 | 3 |
| | PC23. Understand basics of working with Android camera | | 8 | 2 | 6 |
| **Total** | | | **100** | **46** | **54** |
| TEL/N2301 Data Handling | PC1. implementing Data Persistence | 100 | 5 | 2 | 3 |
| | PC2. sharing and Loading user Preferences | | 4 | 2 | 2 |
| | PC3. storing Data to internal Storage, External Storage | | 3 | 2 | 1 |
| | PC4. Test data connectivity | | 3 | 1 | 2 |
| | PC5. using Database | | 3 | 2 | 1 |
| | PC6. applying commands to query data | | 6 | 3 | 3 |
| | PC7. Use of loaders to load database | | 5 | 2 | 3 |
| | PC8. bundling Database with Application | | 3 | 1 | 2 |
| | PC9. using Content Providers and resolve to provide an interface to the app's data | | 2 | 1 | 1 |
| Messaging and Networking | PC10. sending SMS messages programmically/using intent | | 3 | 1 | 2 |
| | PC11. receiving SMS and Processing SMS | | 3 | 0 | 3 |
| | PC12. sending Email | | 2 | 0 | 2 |
| | PC13. working with Bluetooth | | 3 | 1 | 2 |

| | | | | | |
|---|---|---|---|---|---|
| | PC14. downloading Text Files, Binary Data, Accessing Web Services | | 2 | 1 | 1 |
| | PC15.performing Asynchronous Call | | 3 | 1 | 2 |
| Location Based Services | PC16. understanding the MAP concept for Android and creating a MAP Project | | 7 | 4 | 3 |
| | PC17. obtaining the Maps API Keys, Displaying the Map | | 3 | 1 | 2 |
| | PC18. controlling the Zoom and changing the Views | | 3 | 1 | 2 |
| | PC19. navigating to specific locations | | 3 | 1 | 2 |
| | PC20.Adding Markers | | 3 | 1 | 2 |
| | PC 21getting a locations that was touched | | 3 | 1 | 2 |
| | PC22. geo coding and reverse Geocoding | | 1 | 1 | 0 |
| | PC23. monitoring Locations | | 3 | 1 | 2 |
| Developing Android Services | PC24. creating your Own Android Services | | 3 | 2 | 1 |
| | PC25. performing Long-Running tasks, Repeated Tasks, Asynchronous Tasks in a Service | | 3 | 1 | 2 |
| | PC26. communicating between a Service and Activity | | 3 | 1 | 2 |
| | PC27. building Activities into Services | | 3 | 1 | 2 |
| | PC28. understand how Android prioritizes tasks | | 3 | 2 | 1 |
| | Pc29. implement alarms | | 6 | 3 | 3 |
| | PC30. understand the concepts of efficient data transfer to minimize battery drain | | 3 | 0 | 3 |
| **Total** | | | **100** | **41** | **59** |
| TEL/N2303 Android Application Testing Android Application Testing | PC1. testing fundamentals, Types of Tests, define/wite App specific test cases | 100 | 8 | 5 | 3 |
| | PC2. testing Android Application using Unit Testing | | 8 | 3 | 5 |
| | PC3. functional /Usability Testing Android Applications | | 8 | 3 | 5 |
| | PC4. ui Testing | | 8 | 3 | 5 |
| | PC5. performance testing | | 8 | 3 | 5 |
| | PC6. battery Impact analysis | | 8 | 5 | 3 |
| | PC7. troubleshoot and debug code | | 10 | 5 | 5 |
| | PC8. understand built-in security features of Android framework | | 2 | 2 | 0 |
| | PC9. Pre-publishing checks and addressing vulnerabilities | | 10 | 5 | 5 |
| | PC10. Security Best Practices for Android VAS Applications | | 10 | 7 | 3 |
| Publishing Android Applications | PC11. bundle application for release on app store | | 10 | 6 | 4 |
| | PC12. publishing procedure/processes | | 4 | 4 | 0 |
| | PC13. store licensing policies | | 4 | 4 | 0 |
| | PC14. options for monetization strategies | | 2 | 2 | 0 |
| **Total** | | | **100** | **53** | **47** |
| **Grand Total** | | 300 | 300 | 140 | 160 |
| **Percentage Weightage:** | | | | 47% | 53% |
| **Minimum Pass% to qualify (aggregate):** | | | | 70% | |