

Assessment Evidence Guide

For

“IoT Associate Engineer”

Level-5

(Summative Assessment)

Dec 2021



**National Vocational & Technical
Training Commission**

Title of Qualification: Level 5 National Qualification Certificate, in Internet of Things (IoT Associate Engineer)	CS Code:	Level: 5	Version: 01
Competency Standard Title: Install/ Configure Android Studio Build Mobile Application Build Robust UI for greater UX (user experience) Test, Debug and use support libraries Program/use background android application with database Save user data/integrate android application with database	Assessment Date (DD/MM/YY): Assessment Time: 05hrs		

Candidate Details	Name: Registration/Roll Number:
Guidance for Candidate	<p>To meet this standard, you are required to complete the following within the given time frame (for practical demonstration & assessment):</p> <p>Assessment Task 1: Candidate is required to develop build a multiscreen app for IoT based smart home (home automation) which includes button and status of home appliance.</p> <p>And complete:</p> <ol style="list-style-type: none"> Knowledge assessment test (Written or Oral) Portfolios at the time of assessment (if any)
Minimum Evidence Required	<p>During a practical assessment, under observation by an assessor, you will complete:</p> <p>Assessment Task 1</p> <p>Performance Criteria 1: Install Software Development Kit (SDK) for required API Level</p> <p>Performance Criteria 2: Download/Install required system Images for AVD</p> <p>Performance Criteria 3: Configure Android Virtual Device (AVD)</p> <p>Performance Criteria 4: Start a new activity by sending an implicit intent that looks for an activity to handle the request.</p> <p>Performance Criteria 5: Add views in the Constraint Layout editor.</p> <p>Performance Criteria 6: Build activity and use image buttons, clickable images, input controls like switches, spinners (Drop down menu).</p>

	<p>Performance Criteria 7: Add drawable, styles and themes to app</p> <p>Performance Criteria 8: Apply material design guidelines to lists and cards.</p> <p>Performance Criteria 9: Update the UI dynamically depending on user input</p> <p>Performance Criteria 10: Update Mobile application layout to perform well in portrait and landscape mode.</p> <p>Performance Criteria 11: Create new activities and start them by sending an explicit Intents.</p> <p>Performance Criteria 12: Run application on emulator</p>
	<p>Portfolios required at the time of assessment (if any) for</p> <p>Performance Criteria 1: Diary log or any other evidence of work completed on Install/ Configure Android Studio</p> <p>Performance Criteria 2: Diary log or any other evidence of work completed on Build Mobile Application</p> <p>Performance Criteria 3: Diary log or any other evidence of work completed on Build Robust UI for greater UX (user experience)</p> <p>Performance Criteria 4: Diary log or any other evidence of work completed on Test, Debug and use support libraries</p> <p>Performance Criteria 5: Diary log or any other evidence of work completed on Program/use background android application with database</p> <p>Performance Criteria 6: Diary log or any other evidence of work completed on Save user data/integrate android application with database</p>

Continued on following page

Assessors Judgment Guide (to be completed by the Assessor and signed both by the assessor and the candidate after the assessment)

Candidate Details	Name: Registration/Roll Number: Candidate Signature:.....
Assessment Outcome	COMPETENT <input type="checkbox"/> NOT YET COMPETENT <input type="checkbox"/> Name of the Assessor: Assessor's code: Signature of the Assessor:

Assessment Summary (to be filled by the assessor)							
Activity	Method					Result	
Nature of Activity	Written	Oral	Observation	Portfolio	Role Play	Competent	Not Yet Competent
Practical Skill Demonstration			✓				
Knowledge Assessment	✓	✓					
Other Requirement							

Each Assessment Task (with performance criteria)				
Assessment Task 1		Description of assessment task 1 Candidate is required to develop build a multiscreen app for IoT based smart home (home automation) which includes button and status of home appliance.		
During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1	Install Software Development Kit (SDK) for required API Level			
2	Download/Install required system Images for AVD			
3	Configure Android Virtual Device (AVD)			
4	Start a new activity by sending an implicit intent that looks for an activity to handle the request.			
5	Add views in the Constraint Layout editor.			
6	Build activity and use image buttons, clickable images, input controls like switches, spinners (Drop down menu).			
7	Add drawable, styles and themes to app			
8	Apply material design guidelines to lists and cards.			
9	Update the UI dynamically depending on user input			
10	Update Mobile application layout to perform well in portrait and landscape mode.			
11	Create new activities and start them by sending an explicit Intents.			
12	Run application on emulator			
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>		

KNOWLEDGE ASSESSMENT

Title of Qualification: Level 5 National Qualification Certificate, in Internet of Things (IoT Associate Engineer)	CS Code:	Level: 5	Version: 01
Competency Standard Title: Install/ Configure Android Studio Build Mobile Application Build Robust UI for greater UX (user experience) Test, Debug and use support libraries Program/use background android application with database Save user data/integrate android application with database	Assessment Date (DD/MM/YY): Assessment Time: 30min		

Guidance for Candidate	To complete your assessment for this Competency Standard, you need to answer the questions on the following pages successfully.
------------------------------	--

Candidate Details	Name:Registration/Roll Number: Candidate Signature:.....
Written Assessment Outcome	COMPETENT <input type="checkbox"/> NOT YET COMPETENT <input type="checkbox"/> Name of the Assessor:Assessor's code: Signature of the Assessor:.....

Questions (Candidate confidently answered questions correctly and demonstrated understanding of the topics and their application)	
What are the protocols for wireless communication?	

Questions (Candidate confidently answered questions correctly and demonstrated understanding of the topics and their application)	
Give examples of Short-range protocols?	
What is MQTT protocols?	
What are the three application layer protocols?	
Which is the best API level SDK for development?	
Describe stages of activity lifecycles?	
Define UI Automator?	
What does “setting a breakpoint” do?	
What is support library and how it compatible to android API level?	
Define the functionality of JSON?	

ANSWER KEY

Sr.	Answers
------------	----------------

1	<p>Communication (Wireless) Protocols in IOT</p> <p>Wi-Fi.</p> <p>Wi-Fi direct.</p> <p>Zigbee.</p> <p>Z wave.</p> <p>Bluetooth.</p> <p>RF.</p> <p>6LowPAN.</p> <p>GPRS/3G/LTE.</p>
2	<p>Examples of short-range wireless communications are Bluetooth, Infrared, Near Field Communication, Ultra- Wide Band, WiFi and Zig- Bee</p>
3	<p>MQTT is an OASIS standard messaging protocol for the Internet of Things (IoT). It is designed as an extremely lightweight publish/subscribe messaging transport that is ideal for connecting remote devices with a small code footprint and minimal network bandwidth.</p>
4	<p>DNS, DHCP, and FTP are all application layer protocols in the TCP/IP protocol suite.</p>
5	<p>For the best development experience with the Android SDK, use Android Studio 4.2 or higher.</p>
6	<p>Stages of the activity lifecycle, the Activity class provides a core set of six callbacks: onCreate(), onStart(), onResume(), onPause(), onStop(), and onDestroy(). The system invokes each of these callbacks as an activity enters a new state.</p>
7	<p>UI Automator is a UI testing framework suitable for cross-app functional UI testing across system and installed apps</p>
8	<p>Breakpoints are one of the most important debugging techniques in your developer's toolbox. You set breakpoints wherever you want to pause debugger execution.</p>

9	<p>The Android Support Library package is a set of code libraries that provide backward-compatible versions of Android framework APIs as well as features that are only available through the library APIs.</p> <p>Each Support Library is backward-compatible to a specific Android API level.</p>
10	<p>JavaScript Object Notation (JSON) is a standard text-based format for representing structured data based on JavaScript object syntax. It is commonly used for transmitting data in web applications (e.g., sending some data from the server to the client, so it can be displayed on a web page, or vice versa)</p>

