

**061006T4ICT**

**ICT TECHNICIAN LEVEL 6**

**IT/OS/ICT/CR/11/6**

**MOBILE APPLICATION DEVELOPMENT**

**NOV/DEC 2023**



**TVET CURRICULUM DEVELOPMENT, ASSESSMENT AND CERTIFICATION  
COUNCIL (TVET CDACC)**

**WRITTEN ASSESSMENT**

**Time: 3 Hours**

**INSTRUCTIONS TO CANDIDATES**

1. This paper has TWO sections A and B. Attempt questions in each section as per instructions given in the section.
2. You are provided with a separate answer booklet.
3. Marks for each question are indicated in the brackets.
4. Do not write on the question paper

**This paper consists of 7 printed pages**

**Candidates should check the question paper to ascertain that all pages are printed as indicated and that no questions are missing**

**SECTION A: 40 MARKS**

*Attempt ALL questions in this section.*

1. Define each of the following mobile development approaches as used in Mobile programming.
  - i. Native; (2 Marks)
  - ii. Web; (2 Marks)
  - iii. Progressive web. (2 Marks)
2. Mobile applications can be broadly categorized into several types based on their functionality and purpose. Briefly describe THREE categories of mobile applications. (3 Marks)
3. Mobile devices have become an indispensable part of modern life, providing a wide range of functionalities and conveniences. Describe TWO limitations associated with mobile devices. (2 Marks)
4. Peter has been hired by ABC T.T.I. to train students about mobile programming. Describe each of the following resource types he will talk about during the training.
  - i. Anim/ (2 Marks)
  - ii. Drawable/ (2 Marks)
  - iii. Value/ (2 Marks)
5. Give TWO reasons why mobile application programmers are encouraged to use mobile development frameworks while programming. (2 Marks)
6. John was contracted to develop a mobile application and he wish to apply different interface styles during development process. State THREE interface styles that he may apply. (3 Marks)
7. Discuss THREE ways that the user experience can be enhanced in a mobile application. (3 Marks)
8. Distinguish between *data replication* and *data synchronization*. (4 Marks)
9. Giving examples, differentiate between *views* and *view groups* in mobile programming. (4 Marks)

10. Write an XML code to create a login page with the following elements. (4 Marks)
- i) Textfield-name for the username
  - ii) Textfield-password for the password
  - iii) Submit button
  - iv) Cancel button
11. The AndroidManifest.xml file is an essential component of an Android application. Explain THREE functions of android manifest file. (3 Marks)

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**SECTION B: 60 MARKS***Attempt any THREE questions in this section.*

12. a) With the help of a well labelled diagram, describe the life cycle of an activity in android programming. (6 Marks)
- b) Sam was contracted by XYZ company to deploy an Android application on a physical mobile device. Describe the procedure he will use in installing the application on the mobile device. (4 Marks)
- c) The Android operating system is a complex and robust platform, consisting of various components. Describe the **Two** key components of an android operating system. (4 Marks)
- d) Study the code extract below and use it to answer the question that follows:

```

import androidx.drawerlayout.widget.DrawerLayout;
import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);

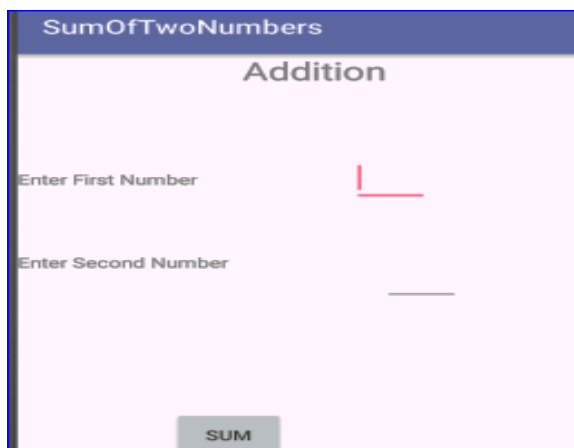
        binding = ActivityMainBinding.inflate(getLayoutInflater());
        setContentView(R.layout.activity_main);
    }

```

Describe the function of the following;

- i. R.Layout.activity\_main file (4 Marks)
- ii. onCreate() method
- e) Android applications offer several advantages, contributing to their popularity and widespread use. State TWO advantages of android applications. (2 Marks)

13. a) Etsy Developers Ltd is a software company that has been contracted to develop a mobile e-learning system to manage various learning activities in Mawego Technical College.
- i) Briefly describe the role of two selection controls that a programmer may use to implement the user interface of the application (4 Marks)
  - ii) Write a sample code that would be used to implement the two selection controls named above (4 Marks)
- b) Mobile application programmers use various layout classes in Android to hold and organize user interface controls effectively. These layout classes help arrange UI elements in a structured manner, enabling developers to create visually appealing and user-friendly interfaces. Describe THREE layout class interface controls that programmers can use. (6 Marks)
- c) The following is an output for an android program to calculate the sum of two numbers supplied by the user.



Write an XML code to implement the interface

Hint: each component should have at least two attributes defining the input\_type and the text. Use relative layout)

(6 Marks)

14. a) Re-write the XML code below eliminating the errors (3 Marks)

```
<?xml version="1.0" encoding="utf-8"?>
<resources
  <
      name="opaque_
      red">#f00
  <string name="greetings">Hi There!</string>
</
  >
```

- b) Write a code extract showing how each of the following classes are inherited from their main classes in android programming. (6 Marks)

- i. Services
- ii. Content providers
- iii. Broadcast receivers

- c) You have been invited to give a talk to programmers having a seminar at a college about programming design methods. Explain the difference you would share with them between *procedural* and (4 Marks)

- d) Giving an example, briefly describe the strings.xml file

- e) In mobile programming, Intents are a fundamental component of the Android operating system that facilitate communication between (3 Marks)  
different components, such as activities, services, and broadcast (4 Marks)  
receivers. Describe TWO applications of **Intent** found in mobile programming.

15. a) The below XML lines were found in an examination paper for level 6 (6 Marks)  
learners. Describe their functions.

```
android:
  layout_
  width="match_
  parent"
android:layout_height="match_parent"
android:fitsSystemWindows="true"
```

- b) Fragments are a crucial component of the Android SDK that represent a portion of a user interface or an operation that can be combined with other fragments to create a multi-pane user interface. Describe **two** characteristics of a fragment. (4 Marks)
- c) The table below shows the grading criteria used at Milimani Technical and Vocational training institute. Use it to answer the questions that follow:

Marks	Grade
Above 80%	A
60-80	B
50-60	C
45-50	D
25-45	E
Below 25	F

- i. Design a simple interface that would enable a student to enter their marks scored in an exam and receives a corresponding grade. Write the XML code to implement the design (Hint: should have at least two text views, an edit text and a button. Use linear layout) (5 Marks)
- ii. Write a method to determine the grade based on scores (use *if* selection) (5 Marks)

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