



UNIVERSITY EXAMINATIONS

FIRST SEMESTER 2025/2026 ACADEMIC YEAR

**THIRD YEAR EXAMINATION FOR THE DEGREES OF
BACHELOR OF SCIENCE IN (ICT), BACHELOR OF
EDUCATION (SCIENCE) AND BACHELOR OF SCIENCE
IN COMPUTER SCIENCE**

COMP 314: MOBILE APPLICATION DEVELOPMENT

STREAM: R

TIME: 2 HRS

DAY: TUESDAY [8.30 A.M – 10.30 A.M]

DATE: 27/01/2026

THIS QUESTION PAPER CONSISTS OF FIVE (5) PAGES

PLEASE DO NOT OPEN UNTIL THE INVIGILATOR SAYS SO.

SECTION A: ANSWER ALL QUESTIONS IN THIS SECTION**QUESTION ONE (30 MARKS)**

- a) As an expert in mobile application development, discuss two ways to stay updated on mobile security trends. **(4 Marks)**
- b) Describe the following layouts in the context user interface of a mobile application. draw a diagram for each case to demonstrate your understanding. **(4 Marks)**
- i) Relative Layout
 - ii) Frame layout
- c) A systems development company has consulted you to execute a mobile application testing on their new developed application before deployment. Describe two technical criteria you will consider while selecting a test automation tool. **(4 Marks)**
- d) Mobile applications can be broadly categorized into several types based on their functionality and purpose. Discuss the categories of mobile applications. **(6 Marks)**
- e) Explain the meaning of the following lines of code in the context of mobile programming. **(6 Marks)**

Java Code

```
public class Lab2 extends Activity {
    public void onCreate (Bundle savedInstanceState)
    { super.onCreate(savedInstanceState);
    TextView view = new TextView(this);
    view.setText("Fresher's Night is on Friday 11th March 2022 \n");
    setContentView(view);
    }
}
```

Kotlin code

```
class Lab2 : Activity() {
    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
```

```

val view = TextView(this)

view.text = "Fresher's Night is on Friday 11th March 2022 \n"

setContentView(view)

}

}

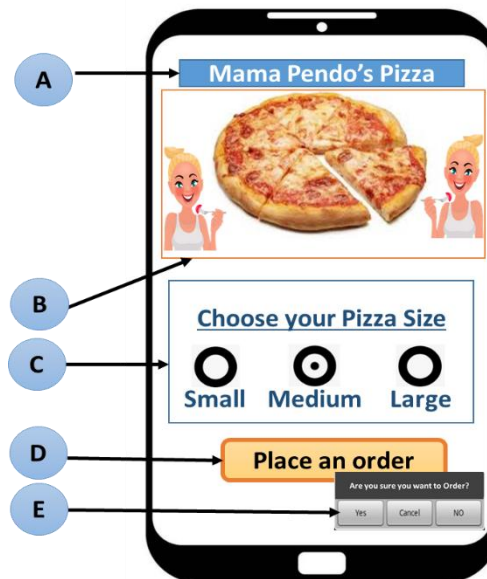
```

f) Discuss four functions of a manifest XML file in mobile programming. (6 Marks)

SECTION B – ANSWER ANY TWO QUESTIONS IN THIS SECTION

QUESTION TWO (20 MARKS)

- a) With aid of illustrative diagrams, **describe** the functional difference between Java Virtual Machine (JVM) and Delvic Virtual Machine (DVM) in with regard to mobile application development on an Android Platform (6 Marks)
- b) Figure 1 shows user interface elements of an Android mobile app used by Mama Pendo Pizza business establishment. Study the figure and answer the questions that follows.



- i) Identify the role of the user interface elements labeled A, B, and C **and** write the XML code snippets that implements each of the elements (9 Marks)

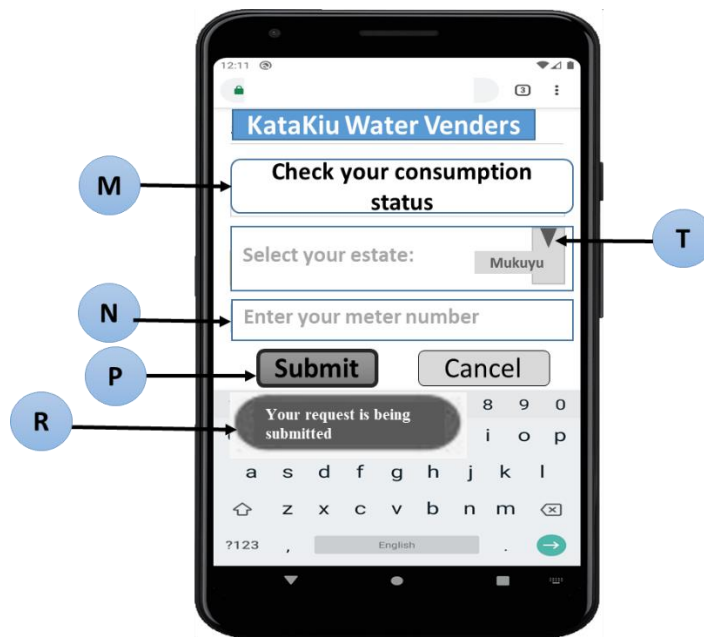
- ii) When the user clicks the button labeled D, the feature labeled E immediately appears on the screen. Describe the role of feature E **and** write the Java or Kotlin code snippet that causes it to appear on the screen **(5 Marks)**

QUESTION THREE (20 MARKS)

- a) A financial services company is launching a mobile banking app. Management wants it to be feature-rich and engaging, but you are concerned about security and performance. Critically discuss four ways on how you would balance innovation with user trust and reliability **(8 Marks)**
- b) Discuss the future of mobile application development in light of technologies such as 5G, Artificial Intelligence, and IoT. Critically evaluate the challenges and opportunities these bring for developers and users. **(12 Marks)**

QUESTION FOUR (20 MARKS)

- a) Explain each of the following features of professionally developed mobile app user interface **(6 Marks)**
- i) Simplicity & Clarity
 - ii) Responsive & Adaptive Design
 - iii) Feedback & Interactivity
- b) Figure 2 shows user interface elements of an Android mobile app used by KataKiu business establishment – a water vender company. Study the figure and answer the questions that follows.



- i) Describe the functional difference between the user interface elements labeled M and N **and** write the Java or Kotlin code snippets that defines the logical operation of each element **(6 Marks)**
- ii) When the user clicks the button labeled P, the feature labeled R immediately appears on the screen. Describe the role of feature R **and** write the Java or Kotlin code snippet that causes feature R to appear on the screen **(5 Marks)**
- iii) Write the Java or Kotlin code snippet that implements the logical functionality of the feature labeled T that allows the user to select his/her residence estate **(3 Marks)**

QUESTION FIVE (20 MARKS)

- a) Examine the legal and compliance considerations (e.g., GDPR, CCPA) that mobile app developers must navigate. How can developers ensure their applications adhere to these regulations? **(5 Marks)**
- b) An app's performance degrades over time. Propose a systematic debugging plan to determine if a memory leak is the cause, and explain which tools you would use on Android/iOS and why **(7 Marks)**
- c) Explore the potential applications of blockchain technology in mobile app development. What are the benefits and limitations of using blockchain, particularly in consumer-facing applications? **(8 Marks)**