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**UNIVERSITY EXAMINATIONS
2022/2023 ACADEMIC YEAR**

**END OF SEMESTER EXAMINATIONS
YEAR FOUR SEMESTER TWO EXAMINATIONS**

**FOR THE DEGREE IN
COMPUTER SCIENCE**

COURSE CODE : CSC 465E

**COURSE TITLE : MOBILE APPLICATION
PROGRAMMING**

DATE: 09/08/ 2023

TIME: 8:00 A.M – 10:00 A.M.

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTIONS ONE AND ANY OTHER TWO.

QUESTION ONE [COMPULSORY] [30 MARKS]

- a) Write a Java code snippet to create a simple Android application with a button. When the button is clicked, display a Toast message saying "Hello, Android!" [6Marks]
- b) What are content providers in Android? Explain their purpose and how they facilitate data sharing between applications. [5Marks]
- c) Describe the Android activity lifecycle and explain the purpose of each stage (methods) in the lifecycle. [6Marks]
- d) How do you handle configuration changes in Android, such as screen rotations? Discuss the different approaches and best practices. [4Marks]
- e) Write a function in Java to check if a device is connected to the internet (both Wi-Fi and mobile data) in an Android application. [4Marks]
- f) What are the major challenges in mobile computing regarding security and privacy? How can these challenges be mitigated? [5Marks]

QUESTION TWO [20 MARKS]

- a) Write a code snippet in Java to create a button in Android and set an onClickListener for the button that displays a toast message when clicked. [6Marks]
- b) Write a code snippet to fetch data from a RESTful API in Android using the Retrofit library. [7Marks]
- c) Write a code snippet to fetch and display a list of items in a RecyclerView in Android. [7Marks]

QUESTION THREE [20 MARKS]

- a) Discuss the key differences between mobile computing and traditional computing. How do factors such as mobility, resource constraints, and network connectivity impact mobile computing? [10 Marks]
- b) Explain the concept of mobile app development frameworks. Discuss the role of frameworks like React Native, Flutter, and Xamarin in simplifying the mobile app development process. [10 Marks]

QUESTION FOUR [20 MARKS]

- a) Enumerate the main types of wireless networks used in mobile computing and their respective advantages and disadvantages. [10Marks]
- b) Describe the role of services in Android. What are the differences between started services and bound services? Provide examples of when to use each type. [6Marks]

- c) Discuss the concept of Mobile Device Management (MDM) and its importance in enterprise-level mobile computing environments. [4Marks]

QUESTION FIVE [20 MARKS]

- a) Describe the use of mobile sensors (e.g., accelerometer, gyroscope) in mobile computing applications, providing specific examples of their practical usage. [10Marks]
- b) What are the challenges and considerations in designing mobile user interfaces (UI)? Discuss the principles and best practices for creating effective and user-friendly mobile UI designs. [10Marks]