(Knowledge for Development)

KIBABII UNIVERSITY

UNIVERSITY EXAMINATIONS
2016/2017 ACADEMIC YEAR

SPECIAL/SUPPLEMENTARY EXAMINATIONS
YEAR FOUR SEMESTER TWO

FOR THE DEGREE
BACHELOR OF SCIENCE COMPUTER SCIENCE

COURSE CODE : CSC 465E

COURSE TITLE : MOBILE APPLICATIONS PROGRAMMING

DATE: 28/09/2017 TIME: 11:30 A.M – 1:30 P.M

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTIONS ONE AND ANY OTHER TWO.

Question 1 (COMPULSORY) **(30 marks)**

a) What is Android? **[2 mark]**

b) Briefly discuss the states of an android application, explaining how the transitions take place. **[8 marks]**

c) Give an outline of the android platform architecture briefly describing its various components. **[8 marks]**

d) Explain the difference between localization and location sensitivity with regard to mobile devices. **[4 marks]**

e) Briefly describe each of the following android application components stating how they are used:

i. Context

ii. Activity

iii. Fragment

iv. Intent

v. Service

f) One important requirement for an `xml` document is that it must be well formed. Consider the following email structure.

```
<message>
      <to>you@yourAddress.com
      <from>me@myAddress.com</from>
      <subject>XML Is Really Cool
      <text>
      How many ways is XML cool? Let me count the ways …
      </to>
      </subject>
      </text>
</message>
```

State with reasons whether it is well formed or not. If it is not well formed re-write the structure so that it is well formed. **[4 marks]**

g) While designing mobile applications, we will find that we often need to balance the solutions to problems presented by each mobility dimension. Explain any such two scenarios where solutions presented may be diametrically opposed. **[4 marks]**

Question 2 **(20 marks)**

Consider the GUI shown below and the corresponding Java code:


```
public class MainActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }
}
```

There are essentially two methods of adding interactivity to the views in the diagram, first using the `onClick` property of the views and the second using the `OnClickListener`

a) Using the `onClick` property
   i. Write the Java code that would cause the blue button to disappear when clicked. [5 marks]
   ii. Write the Java code that would make the pink button to display a pop up message "Your flight leaves in 4 hours!" when clicked. [5 marks]

b) Using the `OnClickListener`
   i. Write the Java code that would cause the blue button to disappear when clicked. [5 marks]
   ii. Write the Java code that would make the pink button to display a pop up message `"Your flight leaves in 4 hours!"` when clicked. [5 marks]

Question 3 **(20 marks)**

a) Mobisoft Ltd is a company that has been dealing in the provision of software solutions for personal computers and servers and now wishes to venture into provision of these services in the mobile device market. Your task as the Chief Software Developer is to recommend to your Software Development Team, clearly and in detail, any three software architectures for mobile applications outlining the strength and weaknesses of each. **[15marks]**

b) Designing the architecture of a software system should be the step immediately following the requirements-gathering process. Explain why it is crucial that the system be designed first before the selection of the tools of the implementation. **[5 marks]**

Question 4 **(20 marks)**

a) You have been hired to lead a small team of software developers tasked to build a mobile application for a promising mobile device scheduled to hit the market shortly. Your company has previous been dealing in software solutions for servers and desktops but you are now required to address the dimensions of mobility inherent in mobile applications. As the team leader explain clearly to your team how the Android architecture addresses the dimension of mobility pointing out those mobility dimensions not effectively addressed by the architecture. **[15marks]**

b) You are working as a computer administrator for a large software solutions company. The company is in the process of deciding how to address platform proliferation. Your boss has asked you to explain the technical difference between the approaches taken by Microsoft's .NET framework in addressing platform proliferation to that taken by Java framework. **[5 marks]**

Question 5 **(20 marks)**

a) Any mobile computing system can also be stationary, so we can say that mobile computing systems are a superset of stationary computing systems. Elements that are outside of the stationary computing subset are referred to as the *dimensions of mobility.* Briefly describe these dimensions of mobility. **[10marks]**

b) Mambo works in the Finance department while you are in the Software development section where you have been asked to spearhead the establishment of a mobile applications unit. You write to the finance department asking for more funds because mobile users differ from non-mobile users and this will affect the application design. Mambo declines arguing that these users are not different. Write a memo to your boss clearly describe any five ways in which the mobile user differs from the non-mobile user and how this affects mobile application design. **[10marks]**