[Knowledge for Development]

KIBABII UNIVERSITY

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UNIVERSITY EXAMINATIONS
2021/2022 ACADEMIC YEAR

END OF SEMESTER EXAMINATIONS
YEAR THREE SEMESTER ONE EXAMINATIONS

FOR THE DEGREE IN
(COMPUTER SCIENCE)

COURSE CODE : **CSC 314**

COURSE TITLE : **MOBILE COMPUTING**

DATE: 18/05/2022   **TIME:** 9:00 A.M – 11:00 A.M.

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTIONS ONE AND ANY OTHER TWO.
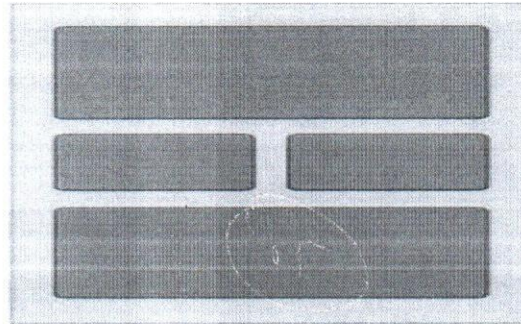
QUESTION ONE (COMPULSORY) [30 MARKS]

a) Write the directory path where images are stored while developing an Android application. **[1 Mark]**

b) Define services in Android operating system. **[2 Marks]**

c) What are the functions of authentication and encryption in GSM? **[6 Marks]**

d) i. Describe the following different tiers in the 3-tier architecture of mobile computing. Tier1, 2, 3. State examples of services offered in each tier. **[6 Marks]**

ii. State THREE characteristics exhibited by a mobile communication device. **[3 Marks]**

e) State and explain four advantages and four disadvantages of satellite transmission. **[8 Marks]**

f) Write a program to display a circular progress bar. **[4 Marks]**

QUESTION TWO [20 MARKS]

a) Differentiate between JVM and DVM. **[4 Marks]**

b) Describe the limitations of mobile devices. **[4 Marks]**

c) i. Explain the concept behind the traditional TCP.

ii. What are the improvements that are made into the classical TCP? **[8 Marks]**

d) List and describe any two Mobile IP components **[4 Marks]**

QUESTION THREE [20 MARKS]

a) Discuss the protocol architecture of GSM. **[10 Marks]**

b) Observe the following GUI and write an XML file using relative layout to create the same. **[10 Marks]**

QUESTION FOUR [20 MARKS]

a) Explain the basic requirements of mobile IP. **[8 Marks]**

b) Describe the significance of SQLite database in Android. **[4 Marks]**

c) A satellite's job in the communications network is to serve as a repeater. Explain

[2 Marks]

d) Explain the difference between 1G, 2G, 2.5G, 3G, 4G and the LTE mobile technologies.

[6 Marks]

QUESTION FIVE [20 MARKS]

a) Explain how tunneling works in general and especially for mobile IP using IP-in-IP, minimal, and generic routing encapsulation respectively. Discuss the advantages and disadvantages of these three methods. **[8 Marks]**

b) Explore the Steps to install and configure Android Studio and SDK. **[4 Marks]**

c) A device A transmits a beacon signal at time 1000 (measured using A's clock), which is received by a device B at 2000 (measured using B's clock). Device B then responds with a signal at 2500 (using its own clock), which is then received by A at 3300 (using its own clock).

(i) What is the distance computed by node A if the signal velocity is 1m per 100-time units? **[6 Marks]**

(ii) What can you say about the synchronization of the two devices? **[2 Marks]**