

**W1-2-60-1-6**

**JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY**

**UNIVERSITY EXAMINATIONS 2014/2015**

**YEAR I SEMESTER II EXAMINATION FOR THE DEGREE OF BACHELOR OF BUSINESS INFORMATION TECHNOLOGY**

**BIT 2223: MOBILE COMPUTING**

**DATE:AUGUST 2015 TIME: 2 HOURS:**

**INSTRUCTIONS: Answer question one (compulsory) and any other two questions.**

**SECTION A COMPULSORY 30 MARKS**

**QUESTION ONE**

a. Mobile computing is a technology that allows transmission of data, voice and video via a computer or any other wireless enabled device without having to connected to a fixed physical link. Briefly explain to advantages and four challenges of mobile computing.

 (6 marks)

b. Define the following terms as used in mobile computing. (4 marks)

 i. WML

 ii. Virtual wireless Network

c. Differentiate between the following terminologies used in mobile computing.

 (8 marks)

 i. 2G and 3 G Technologies.

 ii. Wi-fi and Wimax.

 iii. Palm Os and Symbian OS

 iv. Synchronous and Asychronous packet Data transmission.

d. Outline and discuss the connection states of a Bluetooth device and also specify which state leads to least power consumption. (4 marks)

e. Explain the parameter which support quality of service in the following. (4 marks)

 i. Wi-fi

 ii. 3G Devices

f. How does GSM uses both FDMA and TDMA Techniques? (4 marks)

**QUESTION TWO (20 MARKS)**

a. Diagrammatically represent GPRS Architecture and describe briefly the role of each component in your architectural diagram. (7 marks)

b. Discuss any five application of wireless and mobile technology. (10 marks)

c. Explain any three advantages of VOIP Technology. (3 marks)

**QUESTION THREE (20 MARKS)**

a. Explain mandatory access mechanism of IEEE 802.11 based on (SMA/CA also explain how contention windows size affect this mechanism. (8 marks)

b. What is DHCP? Explain how dynamic IP configuration is performed by DNCP.

 (4 marks)

c. Choosing an administrative password is one of the easiest and least expensive ways to guard such a wireless network against unauthorized access. Unfortunately too many people prefer to use an easy to remember password. Discuss four wireless network security Techniques. (8 marks)

**QUESTION FOUR (20 MARKS)**

a. Differentiate between the following terms as used in mobile computing.(6 marks)

 i. IPV4 and IPV 6

 ii. Dynamic and static configuration

 iii. 1EEE802-11 g and 1EEE802.11 n

b. Explain the Blue tooth stack, listing the function of each protocol, why only 7 active device at a time can communicate to a master in blue tooth. (8 marks)

c. Briefly explain how wireless router performs Network Address Translation (NAT) in dynamic routing. (6 marks)

**QUESTION FIVE (20 MARKS)**

a. With an aid of a clear well labeled diagram describe a GSM system Architecture.

 (8 marks)

b. What is mobile IP? Explain Registration Agent discovery Tunneling and reverse Tunneling in mobile IP. (4 marks)

c. Determine the network, broadcast, number of host and host address for the first and the last host 10.10.198.200/29. (8 marks)