



(Knowledge for Development)

KIBABII UNIVERSITY COLLEGE

**A CONSTITUENT COLLEGE OF
MASINDE MULIRO UNIVERSITY OF
SCIENCE AND TECHNOLOGY**

UNIVERSITY EXAMINATIONS

2014/2015 ACADEMIC YEAR

FOURTH YEAR SECOND SEMESTER

MAIN EXAMINATION

FOR THE DEGREE OF COMP SCIENCE

COURSE CODE: CSC 455 E

COURSE TITLE: WIRELESS SYSTEMS AND PROTOCOLS

DATE: 7TH MAY, 2015

TIME 11.30-1.30PM

INSTRUCTIONS TO CANDIDATES

Answer Question One in Section A and Any other **TWO** (2) Questions in Section B

Answer question ONE and any other TWO questions.

QUESTION 1 {30 MARKS}

- a) i) Define “Frequency re-use” as used in cellular networks [1 Marks]
- b) ii) Explain the importance of frequency re-use [1 Marks]
- c) Differentiate between the following terms: [10 Marks]
 - i. Microcells and Picocells
 - ii. WLAN and WLL
 - iii. GPRS and GSM
 - iv. Cell and Cluster
 - v. TDMA and CDMA
- d) Explain what you understand by the following terms. [6 Marks]
 - i. Ducting
 - ii. Signal Fading
 - iii. Absorption
 - iv. Handoff
 - v. Trunking
 - vi. Sectoring
- e) Bluetooth is a technology in wireless cellular and mobile arena. Discuss. [4 Marks]
- f) Outline any FOUR benefits of WLANs. [2 Marks]
- g) WLANs use collision *avoidance* rather than collision *detection*, which is used by Ethernet LANs. Explain the difference. [3 Marks]
- h) Explain how Carrier Sense Multiple Access/Collision Avoidance works [3 Marks]

QUESTION 2 {20 MARKS}

- a) Access point connectivity goes through three stages. Using a diagram discuss these stages. [4 Marks]
- b) WAP uses MAC addressing scheme hence work in layer 2. Using a diagram, describe MAC address frame header. [4 Marks]
- c) Discuss any FOUR performance considerations with regard to a cellular mobile system. [8 Marks]
- d) State and explain main differences between WIFI and WIMAX technologies [4 Marks]

QUESTION 3 {20 MARKS}

- a) Using a suitable diagram describe the GPRS architecture and explain each block. [8 Marks]
- b) Discuss the GSM channels and channel modes in brief. [6 Marks]
- c) State and explain any three software tools used to monitor and trouble shoot wireless connections. [6 Marks]

QUESTION 4 {20 MARKS}

- a) 802.11 family of protocols has four main flavors. Discuss clearly indicating characteristics and capabilities. [8 Marks]
- b) Explain any four salient features of TDMA. [6 Marks]
- c) Explain the following security features of WLAN [6 Marks]
 - i. WPA

- ii. WEP
- iii. Open authentication

QUESTION 5 {20 MARKS}

- a) Discuss the five components of wireless mobile network
- b) Using a suitable illustration explain how mobile IP works.

[10 Marks]

[10 Marks]