



# **MAASAI MARA UNIVERSITY**

**REGULAR UNIVERSITY EXAMINATIONS  
2019/2020 ACADEMIC YEAR  
FOURTH YEAR FIRST SEMESTER**

**EXAMINATION FOR THE DEGREE OF  
BACHELOR OF SCIENCE IN COMPUTER  
SCIENCES**

**COURSE CODE: COM 4104**

**COURSE TITLE: WIRELESS COMMUNICATION**

**DATE: 6<sup>TH</sup> DECEMBER, 2019**

**TIME: 1100 - 1300HRS**

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**INSTRUCTIONS:  
SECTION A IS COMPULSORY ATTEMPT TWO  
QUESTIONS IN SECTION B**

## SECTION A

### QUESTION ONE (30 MARKS)

- A. Define the following terms as used in communication. (3 marks)
- i) Modulation
  - ii) Signal
  - iii) Ducting
- B. Discuss the three forms of polarization. (3 marks)
- C. Describe how an antenna works. (5 marks)
- D.
- i) What is an access point? (1 mark)
  - ii) List three modes through which an access point operates. (3 marks)
- E. Describe the following 802.11 standards; (3 marks)
- i) 802.11ac
  - ii) 802.11ad
- F. State five checks that are carried out during a spot verification in wireless network installation. (5 marks)
- G.
- i) Explain the function of a network analyzer. (1 mark)
  - ii) List any two tools used in analyzing a network. (2 marks)
- H. Explain how RFID differ from UPC. (2 marks)
- I. Which is the best frequency to use in a wireless connection? Give reason why. (2 marks)

## SECTION B

### QUESTION TWO (20 MARKS)

- A. Why is it important to do an installation verification after installation of a wireless network? (1 mark)
- B. Explain how a simple ping test is carried out in wireless network installation. (8 marks)
- C. List the three basic tools used in spectrum analysis (3 marks)
- D. State one methods that are used in carrying out a site survey. Give one advantage and one disadvantage of the method mentioned. (3 marks)
- E. List any five regulatory authorities of wireless systems. (5 marks)

### QUESTION THREE (20 MARKS)

- A. Differentiate between active and passive components that are used in RF systems. (1 mark)
- B. Other than being active or passive, state other two properties that are exhibited by the components used in RF systems. (2 marks)
- C. Discuss five environmental factors that affect propagation of signals. (10 marks)
- D. Calculate the line of sight that has to be observed for a given propagation of a signal given that the distance between the two point of communication is 1.34km and the frequency of the signal is 12.4Hz. (4 marks)
- E. Explain three ways through which data can be sent over a transmission media. (3 marks)

### QUESTION FOUR (20 MARKS)

- A. Differentiate between analog signals and digital signals. (4 marks)
- B. Discuss the three forms of modulation. (6 marks)
- C. State the two sources of naturally occurring noise. (2 marks)
- D. Explain three properties of an amplifier. (6 marks)
- E. Differentiate between a limiting amplifier and a balancing amplifier. (2 marks)

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