



MAASAI MARA UNIVERSITY

REGULAR UNIVERSITY EXAMINATIONS

2021/2022 ACADEMIC YEAR

FOURTH YEAR FIRST SEMESTER

**SCHOOL OF PURE, APPLIED AND HEALTH
SCIENCES**

**DEGREE OF BACHELOR OF SCIENCE
(COMPUTER SCIENCE)**

COURSE CODE: COM 4104

COURSE TITLE: WIRELESS COMMUNICATION

DATE: 1ST APRIL 2022

TIME: 08.30am-10.30am

INSTRUCTIONS TO CANDIDATES

- Question ONE in Section "A " is Compulsory
- Answer any Two (2) Questions from Section "B"

SECTION A

QUESTION ONE (COMPULSORY 30 MARKS)

1. Describe the following terminologies in relation to satellite communications **[5 marks]**
 - i. Earth stations
 - ii. Uplink
 - iii. Downlink
 - iv. Transponder
 - v. Elevation angle
2. Describe the basic concept of spread spectrum and three benefits arising from use of spread spectrum **[3 marks]**
3. Describe any four categories of noise **[4marks]**
4. Identify four significant strengths that wireless communication systems have over the wired communication systems **[4 marks]**
5. Explain at least three (3) benefits which result from migration from analog to digital transmission. **[6Marks]**
6. State four applications particularly suited to GPRS **[4Marks]**
7. Explain the functions of the following components of RFID:
 - i. Antenna
 - ii. Active tags
 - iii. Passive tags
 - iv. Readers**[4marks]**

SECTION B

QUESTION TWO (20 marks)

1. Describe the following three types of antennas, describe or sketch their radiation patterns and indicate areas of application **[6 marks]**
 - a. Half-wave dipole
 - b. Quarter-wave dipole

- c. Parabolic
2. Describe in detail the following 2 standards **[4 marks]**
- i. IEEE 802.11b standard
 - ii. IEEE 802.11a standard
3. What determines how successful a receiver will be interpreting an incoming signal? Briefly explain **[4 marks]**
- With the aid of diagrams, explain how satellites operate. **[6 Marks]**

QUESTION THREE (20 marks)

1. Describe briefly the Bluetooth technology **[3marks]**
2. State any five prevalent applications of Bluetooth **[5 marks]**
3. What makes it difficult to jam signals transmitted in a spread spectrum technique? **[3 marks]**
4. Describe the error detection process **[4 marks]**
5. Describe the 3 major radio propagation mechanisms **[4 marks]**

QUESTION FOUR (20 marks)

1. (i) Explain briefly two similarities between WLANs and LANs. **[2Marks]**
- (ii) Explain briefly four differences between WLANs and LANs. **[4 Marks]**
- c) Explain any three benefits of wireless solutions. **[6 Marks]**
- b) Wireless Application Protocol (WAP) is the de facto world-wide standard for providing Internet communications and advanced telephony services on digital mobile phones, pagers, PDAs and other wireless terminals. With the aid of a diagram, explain how this works **[8 Marks]**

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