

70



**MASINDE MULIRO UNIVERSITY OF
SCIENCE AND TECHNOLOGY
(MMUST)**

MAIN CAMPUS

**UNIVERSITY EXAMINATIONS
2022/2023
SECOND YEAR FIRST SEMESTER EXAMINATIONS**

BACHELOR OF COMPUTER SCIENCE

COURSE CODE: BCS 214

COURSE TITLE: DATA COMMUNICATION SYSTEMS

DATE: 05/12/2022

TIME: 3.00a.m. – 5.00P.m.

INSTRUCTIONS TO CANDIDATES

Question ONE (1) and Any OTHER 2 questions

TIME: 2 Hours

MMUST observes ZERO tolerance to examination cheating

This Paper Consists of 2 Printed Pages. Please Turn Over. ►

- Q1 a) Draw a labeled block diagram of a communication system, 8mks
- b) i) Discuss 2 reasons for modulation and demodulation in data communication 4mks
- ii) The value of the resistor creating thermal noise is doubled. The estimate noise power factor generated 3mks
- c) OUTLINE 2 advantages of digital transmission over analogue transmission 4mks
- d) Briefly explain 3 multiplexing techniques 6 Marks
- e) Differentiate between guided media and unguided media, state one advantage of each 5 Marks
- Q2a) Explain ADC and DAC in data communication 6mks
- b) Differentiate between synchronous and asynchronous transmission 4 Marks
- c) List 2 advantages and 2 disadvantages of FM over AM 4mks
- d) State 2 reasons Amplitude modulation is used for broadcasting 4 marks
- d) The modulation index of an AM is changed from 0 to 1. Estimate the change in transmitted power 2 marks
- Q3 a) Using suitable diagrams explain Amplitude shift keying, Frequency shift keying and explain their application 8mks
- b) Explain 3 types of signal impairments and how they can be minimized 6mks
- c) Differentiate between baseband and broadband transmission 6mks
- Q4 a) Explain line coding, Using a sketch explain NRZ, Bipolar line coding schemes. 8mks
- b) Differentiate between GSM technology and CDMA Technology 6mks
- c) Explain about Voice Over Internet Protocol. 6mks
- Q5 a) briefly explain noise in telecommunication and electronics 2 mks
- b) Explain circuit switching, message switching and packet switching (6 marks)
- c) Explain (i) Block encoding 3 marks
(ii) Encapsulation 2 mark
- iii) Parallel & Serial Transmission 3 marks