



(University of Choice)

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY

(MMUST)

MAIN CAMPUS

UNIVERSITY EXAMINATIONS

2021/2022 ACADEMIC YEAR

FOR THE DIPLOMA

IN

INFORMATION TECHNOLOGY

COURSE CODE: DIT 079

COURSE TITLE: DIGITAL ELECTRONICS

DATE: 21/04/2022

TIME: 12:00 – 2:00PM

INSTRUCTIONS TO CANDIDATES

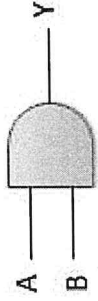
Answer Questions ONE and ANY OTHER TWO.

TIME: 1 HOUR 30 MINUTES

MMUST observes ZERO tolerance to examination cheating
QUESTION ONE (24MKS)

This Paper Consists of 3 Printed Pages. Please Turn Over.

- a. Define the following terms as used in digital electronics
i. Signal [2MKS]
ii. Digital [2MKS]
- b. State two areas where BCD codes is heavily used in computer systems [2MKS]
- c. Convert the following code to binary
i. (00101001)_{BCD} [4MKS]
ii. 21BDA [4MKS]
- d. Using an illustration, explain how errors occur during data transmission [4MKS]
- e. Given the following logic diagram



- i. With a reason, state which type of logic gate the diagram represents [2MKS]
- ii. Draw a TRUTH TABLE with all possible input and output [4MKS]

QUESTION TWO (18 MKS)

- a. State one use of binary complements in digital electronics [2MKS]
- b. Given the decimal number 5, convert it into XS-3 code clearly showing your working [4MKS]
- c. List two examples of alphanumeric code [2MKS]
- d. Clearly showing your working, convert the following numbers to decimal number systems
i. 19FDE [4MKS]
ii. 10101₂ [4MKS]
- e. Explain one use of Boolean algebra [2MKS]

QUESTION THREE (18 MKS)

- a. State four applications of Digital electronics [4MKS]
- b. Clearly showing your working, convert the following decimal numbers into a weighted code
i. 26₁₀ [4MKS]
- c. State two advantages and two disadvantages of BCD codes [4MKS]
- d. Using an illustration, define the term error code [4MKS]
- e. Differentiate between odd parity and even parity [2MKS]

QUESTION FOUR (18MKS)

- a. Convert the following BCD code to decimal [4MKS]
i. (10101001)_{BCD}

- b.** Discuss the following types of flip-flops
- i. S-R Flip Flop
 - ii. Master Slave JK Flip Flop
 - iii. Toggle Flip Flop
- c.** Define the term Boolean law

[4MKS]
[4MKS]
[4MKS]
[2MKS]

QUESTION FIVE (18MKS)

- a.** Clearly showing your working, Convert the following decimal numbers into excess-3 codes
- i. 7_{10}
 - ii. 5_{10}
- b.** Define the term computer memory
- c.** State four uses of the auxiliary memory of the computer that makes it important
- d.** Discuss the following types of ROM and how they help in the computer organization
- i. EPROM
 - ii. EEPROM

[3MKS]
[3MKS]
[2MKS]
[4MKS]
[3MKS]
[3MKS]