



MACHAKOS UNIVERSITY

University Examination 2018/2019

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

FIRST YEAR SECOND SEMESTER EXAMINATION FOR

CERTIFICATE IN ELECTRICAL AND ELECTRONIC ENGINEERING (TVET)

1601/102: ELECTRONICS

DATE: 18/4/2019

TIME: 2.30-5.30 PM

INSTRUCTIONS:

Answer question one and any other two questions

QUESTION ONE (30 MARKS)

- a) Convert the following binary numbers i) 11001.11
 - i. 11100
 - ii. 11111.101 to decimal.
- b) Convert the following decimal numbers i) 45,
 - i. 273,
 - ii. 946,
 - iii. 380 to binary
- c) Convert the following hexadecimal numbers i) BF2 ,ii) 4D7E iii) 3BB1 iv) 96DA to binary
- d) Convert the binary number
 - i. 11011100,
 - ii. 11100011 to hexadecimal

QUESTION TWO (20 MARKS)

- a) Convert the following decimal numbers i) 20, ii) 345 ,iii) 654, iv) 1000 to octal

- b) Convert the following octal numbers i) 367 ii) 342 iii) 471 iv) 23 to hexadecimal
- c) Convert
- $(1001)_{BCD}$
 - $(100100)_{BCD}$ to Excess-3.
- d) Convert the following numbers in binary
- 111100
 - 1101100 to BCD

QUESTION THREE (20 MARKS)

- a) Perform the following functions
- $1111001 + 110001$
 - $111X101$
- b) Using two's complement perform the following
- $1010 - 1100$
 - $1100 - 1110$

QUESTION FOUR (20 MARKS)

Draw the logic circuit and the truth table for a three input logic circuit.

- a) $F = \overline{A}BCD + \overline{A}BC\overline{D} + ABCD$
- b) $F = \overline{A}\overline{B} + ABCD + AB\overline{C}\overline{D}$

QUESTION FIVE (20 MARKS)

Minimize the following Boolean expressions

- a) $F = \overline{A}\overline{D} + ABCD + \overline{A}BC\overline{D}$
- b) $\overline{F} = \overline{A}\overline{B}\overline{C}\overline{D} + ABCD + ABCD$