



TECHNICAL UNIVERISTY OF MOMBASA

Faculty of Engineering & Technology

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

DIPLOMA IN MECHANICAL & AUTOMOTIVE ENGINEERING (DMAE 03)

EMR 2219: ICT IV

END OF SEMESTER EXAMINATION

SERIES: APRIL 2015

TIME: 2 HOURS

Instructions to Candidates:

You should have the following for this examination

- *Answer Booklet*

This paper consists of **FIVE** questions.

Attempt question **ONE (Compulsory)** and any other **TWO** questions

Maximum marks for each part of a question are as shown

This paper consists of **THREE** printed pages

Question One (Compulsory)

- a) Convert the following binary numbers to their decimal equivalents: (2 marks)
(i) 1100110_2 (2 marks)
(ii) 11111001_2
- b) Convert the following decimal numbers to their binary equivalents (2 marks)
(i) 49_{10} (2 marks)
(ii) 21_{10}
- c) Solve the following binary subtraction problem using the complement method (3 marks)
(i) $11001101_2 - 10101010_2$ (3 marks)
(ii) $100100_2 - 11101_2$
- d) Correct the following octal numbers to their decimal equivalents: (3 marks)
(i) 536_8 (3 marks)
(ii) 1163_8

Question Two

- a) What is MATLAB (2 marks)
- b) Explain any FIVE features of MATLAB (10 marks)
- c) Describe how you would perform simple arithmetic operations shown below using MATLAB (4 marks)

$$\sum_{j=1}^{12} \frac{1}{j}$$

- d) Explain how you would compute the following function using MATLAB and print an output.

$$f(x) = 3x^6 - 17x^3 + 79 \quad \text{when } x = 2^{1/3} \quad \text{(4 marks)}$$

Question Three

- a) Explain any FIVE features of C program (5 marks)
- b) Explain the distinction of each of the following giving examples how each is used. (8 marks)
(i) Scanf and printf
(ii) Pointers and Arrays
- c) Write a simple C program that would accept two integer numbers and compute the perimeter and area of a rectangle (7 marks)

Question Four

- a) What is a computer virus (2 marks)
- b) Explain any FIVE ways one would safeguard organization computers from being infected by viruses (10 marks)
- c) State and describe any FOUR types of computer viruses (8 marks)

Question Five

a) Describe any FIVE features of AUTOCAD (10 marks)

b) Explain how you would create each of the following drawing using AUTOCAD 2010 (10 marks)

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