



TECHNICAL UNIVERISTRY OF MOMBASA

Faculty of Engineering & Technology

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

UNIVERSITY EXAMINATION FOR DEGREE IN:
BACHELOR OF MATHEMATICS IN COMPUTER SCIENCE
(BMCS 13S-FT)

EIT 4251: SCIENTIFIC COMPUTING

END OF SEMESTER EXAMINATION
SERIES: DECEMBER 2014
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 **TWO** printed pages

Question One (Compulsory)

a) Explain the following terms:

(i) Programming paradigm

(ii) Pre-processor

(iii) Whitespace

(iv) Constant

(8 marks)

b) Describe FIVE attributes of a C variable

(5 marks)

c) Given the principal amount, the payment period and the interest rate, write a simple C program to evaluate the simple interest.

(8 marks)

d) With examples, describe the FOUR types of constants used in a C program

(7 marks)

- e) Explain the difference between “Const int d = 5” ad “int const d = 5” (2 marks)

Question Two

- a) A simple Electronic circuit has several capacitors connected in parallel. Write a simple C program to evaluate the effective capacitance of this circuit. (Hint: Program should prompt one to enter the number of capacitors and their values of capacitance in Mfarads) (10 marks)
- b) Outline the main difference between a compiler and an interpreter (6 marks)
- c) Distinguish between an algorithm and a pseudo code (4 marks)

Question Three

- a) Write a simple C program to evaluate the sum of two square matrices (Hint: the program should prompt the user to);
(i) Specify the number of columns and rows for both matrices
(ii) Specify the elements for each matrix (10 marks)
- b) Explain the term Token as used in a C-program (2 marks)
- c) With examples, outline the basic types of Token’s used in a C program (8 marks)

Question Four

- a) Write a simple C program to convert temperature from degrees centigrade to Degrees Fahrenheit (8 marks)
- b) Explain the importance of the loop statement in a C program (2 marks)
- c) Outline any Four ways in which the ‘for’ loop statement may be used in a C program (8 marks)
- d) Explain the term storage class (2 marks)

Question Five

- a) Explain the following terms:
(i) Array
(ii) Pointer (4 marks)
- b) With respect to C-storage class define the following terms:
(i) Scope
(ii) Extent (4 marks)
- c) Explain the term program error (2 marks)
- d) Outline the SIX phases of executing a C program (10 marks)