



TECHNICAL UNIVERISTRY OF MOMBASA

Faculty of Engineering & Technology

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

UNIVERSITY EXAMINATION FOR DEGREE IN:
BACHELOR OF TECHNOLOGY IN INFORAMTION TECHNOLOGY
BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY
(BTIT & BSIT 14S – Y1 S1)

BIT 2104/EIT 4102: INTRODUCTION TO PROGRAMMING & ALGORITHMS

EIT 2104/EIT 4102: FUNDAMENTALS OF PROGRAMMING

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 main structured features of C++ programming language **(2 marks)**
- b) Outline the relationship between problem solving and computer programming **(4 marks)**
- c) Explain the term pre-processor directive and give TWO examples of a pre-processor directive. **(4 marks)**
- d) Error handling is an integral part of programming, explain error handling and THREE common error that occur in programming **(5 marks)**
- e) Write a program that asks for user input from 15 to 35 then calculate the sum and average **(3 marks)**
- f) List the stages of the software development life cycle **(6 marks)**
- g) Design a program flowchart to select largest number among three numbers. **(6 marks)**

Question Two

- a) Using structure, develop a program to capture outpatient details: Name, Age, Gender, Charges, Medicine, Diagnosis and Referral. **(12 marks)**
- b) Explain how the quality of design affect the software maintenance cost **(4 marks)**
- c) Write a C++ to evaluate different inputs as zero positives or negative values **(4 marks)**

Question Three

- a) Define the term “function” as used in programming and list different types of inbuilt functions **(4 marks)**
- b) Using a function and a case selection statements, write a program to calculate the area of a circle, rectangle and cylinder:
- c) Differentiate between:
 - (i) Pass-by-value and pass-by-reference
 - (ii) Function call and function prototype **(6 marks)**

Question Four

- a) Explain the essence of control structures in a programming language **(2 marks)**
- b) Using a switch develop a calculator that prompt the user to input two operands and an operator to process **(8 marks)**
- c) Differentiate between top-down and bottom-up decomposition **(4 marks)**
- d) Write a program that asks the user for a number n and gives him the possibility to choose between computing the sum and computing the product of 1 **(6 marks)**

Question Five

- a) Differentiate between structured programming and unstructured programming **(6 marks)**
- b) Write a program that performs the following:
 - (i) Define an array called scores of size 20 and type int
 - (ii) Read 20 different values inside the array. The reading process should be done using loop. The values should be in the range of 0 to 100 inclusive
 - (iii) Calculate the average of the grades
 - (iv) Calculate the highest grade **(12 marks)**
- c) Write a program that evaluate the number entered as even, odd, or a zero **(4 marks)**