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University Examinations 2013/2014

FIRST YEAR, FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY

BIT 2104: INTRODUCTION TO PROGRAMMING AND ALGORITHMS

DATE: APRIL 2014 **TIME: 2 HOURS**

INSTRUCTIONS: *Answer question **one** and any other **two** questions*

QUESTION ONE – (30 MARKS)

a) A program is required to accept the length and width of a square and display its area.

i. Write a pseudo code to represent the solution to the program described above. (4 marks)

ii. Draw a flow chart to represent the solution to the program above. (6 marks)

iii. Write a program that accepts the length and width of the square and displays its area. (6 marks)

b) (i) What is a function? (2 marks)

(ii) Distinguish between a Global and local variable. (4 marks)

(iii) Distinguish between used defined functions and inbuilt functions. (4 marks)

c) After designing suitable variable names, they must be declared. What is **declaration of a variable** in the context of C program. (4 marks)

QUESTION TWO - (20 MARKS)

a) Writer a program that uses a loop to generate and display numbers 0 to 9. (6 marks)

b) Explain any FIVE features of C as a programming language that make it a preferable choice over most languages for system development. (5 marks)

c) A local hotel at Thika offers two types of Menu; Sit-in and Take away. For the same order, the sit-in order is charged an extra 12% Service levy. The hotel also has daily promotional offers on some of the menu items where promotional sit-in menu items are not charged the service levy while those on the take away menu are charged at 5% less on the price.

Required :

Represent the Algorithm to automate this process using both a flow-chart and Pseudo code. (9 marks)

QUESTION THREE – (20 MARKS)

a) Write a C program to calculate the value of money at the end of each year over a period of 10 years assuming an interest rate of 12 percent and the initial amount was 10,000. The program should print the year and its corresponding amount in two columns.
Use the appropriate data types for the program variables. (10 marks)

b) Describe the four basic data types in C programming language. (4 marks)

c) Differentiate between a While….statement and Do….Statement in C. (4 marks)

d) Discuss the file opening modes in C language. (2 marks)

QUESTION FOUR – (20 MARKS)

a) Using the Switch statement , create a C program that prints the grade of module based on the criteria;

Mark	Grade
80 - 100	A
60 - 79	B
40 - 59	C
<40	F

T he program should print the message "Failed Module – Student Re-sit the Module" when a student gets Grade "F" (10 marks)

b) Describe the importance of Program documentation. (4 marks)

c) Describe the advantages of Structured programming. (4 marks)

d) Differentiate between a Reserved word and identifier in C language. (2 marks)

QUESTION FIVE – (20 MARKS)

a) With the aid of an example, explain the structure of a C program. (8 marks)

b) Explain the qualities of a good program. (4 marks)

c) Differentiate between the following with suitable example;

i. Break and continue statements (4 marks)
ii. Printf() and scanf() functions (4 marks)