

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

**FIRST YEAR SEMETER TWO EXAMINATION FOR THE AWARD OF
BACHELOR OF SCIENCE MATHS/ CHEMISTRY/ PHYSICS/
INDUSTRIAL CHEMISTRY/ ACTUARIAL SCIENCE**

**COSC 104: INTRODUCTION TO COMPUTER PROGRAMMING
METHODOLOGIES**

**STREAMS: B.SC MATHS/CHEM/PHYS/ INDUSTRIAL CHEM/ ACTUARIAL SCI
(Y1S2) TIME: 2 HOURS**

DAY/DATE: TUESDAY 16/4/2019

2.30 P.M. – 4.30 P.M.

INSTRUCTIONS:

- **Answer question ONE and any other TWO**
- **Do not write on the question paper**

SECTION A: Answer all questions in this section

QUESTION ONE (30 MARKS)

- Distinguish between **Selection** and **Iteration** control structures. [4 marks]
- Using a control structure of your choice:
 - Write a program that prints all the **ODD** numbers less than 10 in reverse order. [6 marks]
 - Draw a flowchart for your program in i) above. [4 marks]
- Describe **TWO** ways by which string input can be read to a variable in C. [4 marks]
- Outline any 4 rules in naming identifiers. [4 marks]
- Write a program that accepts two numbers. The program then displays the Sum, Product, Quotient and Remainder (Modulus) separated by tabs. [6 marks]
- Giving examples define escape sequences in C. [2 marks]

SECTION B: ATTEMPT ANY TWO QUESTIONS (40 MARKS)

QUESTION TWO (20 MARKS)

- Highlight the aspects of a function in relation to the C programming language giving the syntax for each aspect in C. [6 marks]
- Differentiate between interpreters and compilers. [4 marks]

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- c) Write a program that stores the first 20 prime numbers into an array. [6 marks]
- d) Write the algorithm for the program in c) above. [4 marks]

QUESTION THREE (20 MARKS)

- a) Define what a data type is and define any **TWO** primitive data types used in most programming languages. (Use a programming language of your choice). [4 marks]
- b) Explain Polymorphism, Abstraction and Inheritance as used in object oriented programming. [6 marks]
- c) Discuss the difference between the **Do-While** and **While** loop controls and write an example program that implements either. [6 marks]
- d) Draw a flowchart that explains the **if...else** selection construct. [4 marks]

QUESTION FOUR (20 MARKS)

- a) Outline the features of high-level programming languages. [4 marks]
- b) Differentiate between Source code and Object Code in compiled programs. [4 marks]
- c) Suppose a set of integer values are stored in an array:
 - i) Write a function to determine the largest value in the array. [4 marks]
 - ii) Write a pseudocode for your program in i) above. [4 marks]
- d) Outline the properties of an effective algorithm. [4 marks]

QUESTION FIVE (20 MARKS)

- a) Outline the merits of dividing large programs into functions. [4 marks]
 - b) Outline the generic steps in any software development process. [5 marks]
 - c) A computer repair shop charges KSh. 100 per hour for labour plus the cost of any parts used in the repair. The minimum charge for any job is however Ksh. 150.
 - i) Write a program that prompts for the number of hours worked and the cost of parts and displays the charge for the job. Use symbolic constants. [6 marks]
 - ii) Draw a flowchart for your program in i) above. [5 marks]
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