

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

CHUKA & THARAKA CAMPUSES

FIRST YEAR EXAMINATION FOR THE AWARD OF DIPLOMA IN COMPUTER SCIENCE

COSC 0140: FUNDAMENTALS OF PROGRAMMING

STREAMS: DIP COMP SCI Y2S1

TIME: 2 HOURS

DAY/DATE: THURSDAY 8/08/2019

8.30 A.M - 10.30 A.M.

INSTRUCTIONS:

- Answer question **ONE** and **TWO** other questions
- Do not write anything on the question paper
- This is a **closed book exam**, no reference materials are allowed in the examination room
- There will be **NO** use of mobile phones or any other unauthorized materials
- Write your answers legibly and use your time wisely.

SECTION A {ATTEMPT ALL QUESTIONS IN THIS SECTION}

QUESTION ONE (30 MARKS)

- a. Design an algorithm to find the highest of three numbers X, Y and Z. [4 marks]
- b. What is the main difference between while loop and do-while loop? [4 marks]
- c. Describe the use of a linker and a loader during program execution process. [4 marks]
- d. Distinguish two ways of calling C++ functions. [4 marks]
- e. A top down approach is one of the major problem-solving techniques in programming, where a big problem is divided into tasks and then divide tasks into smaller sub tasks and so on. Highlight four advantages of using this method to solve problems. [4 marks]
- f. Name four rules a programmer should adhere to while naming variables [4 marks]
- g. Explain two ways of representing an algorithm. [4 marks]
- h. In an array of N integers, Array index starts with _____ and ends with _____ [2 marks]

SECTION B {CHOOSE ANY TWO QUESTIONS FROM THIS SECTION}

QUESTION TWO (20 MARKS)

- a. Generally, there are stages involved in developing and implementing a solution. Explain five main stages of a software development process. [10 marks]

- b. Programming is about solving problems. Most often, a programmer, or a group of programmers, is presented with a problem and asked to produce a computerized solution for that problem. Explain why programming concepts is considered as:
 - i. Science [2 marks]
 - ii. Skill [2 marks]
 - iii. Engineering [2 marks]
 - iv. Art [2 marks]

- c. Write two lines of code to differentiate pre increment and post increment. [2 marks]

QUESTION THREE (20 MARKS)

- a. Using functions, write a C++ program to prompt a user for two integers. Then the program should calculate their addition, subtraction, multiplication, division, and modulus. Your program should display the results on the screen. [15 marks]

- b. Tabulate five differences between a compiler and an interpreter [5 marks]

QUESTION FOUR (20 MARKS)

- a. Using flow diagrams, write the syntax for the following decision structures
 - i. For-loop [5 marks]
 - ii. Switch statement [5 marks]

- b. Given five integers, write a C++ program to accept the numbers into array, and Print the numbers in descending order. [10 marks]

QUESTION FIVE (20 MARKS)

- a. Giving an example, distinguish between syntax, run time, and logical error experienced in programming. [9 marks]

- b. Write a program that outputs odd integers from range of 10 to 20 [6 marks]

- c. Highlight five good programming practices [5 marks]

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