

CHUKA UNIVERSITY
University Examinations 2018/ 2019

**FIRST YEAR EXAMINATION FOR THE AWARD OF
DEGREE IN BACHELOR OF SCIENCE IN COMPUTER SCIENCE**

COSC 120: FUNDAMENTALS OF COMPUTER PROGRAMMING

STREAM: B.SC COMPUTER SCIENCE Y1S2

DATE: APRIL 2019

TIME: 2 HOURS

Instructions:

Answer Question 1 and Any Other Two.

Do not write on the question paper.

SECTION A: Answer all questions in this section

QUESTION ONE (30 Marks)

- a) Differentiate between compiled programs and interpreted programs. **[2 Marks]**
- b) What is an identifier? Outline **three** basic rules of naming identifiers. **[5 Marks]**
- c) A program is required that prints "PASS" if the score captured is above 40 and "FAIL" if otherwise
 - i) Write an algorithm for the problem described above. **[3 Marks]**
 - ii) Draw a flowchart for the algorithm. **[4 Marks]**
 - iii) Write a python program that solves the problem. **[4 Marks]**
- d) Justifying your answer, state whether the python code snippet below is correct or not.
$$y = 5$$
$$x = y + 2$$
$$y + 2 = x$$
 [2 marks]
- e) Explain the common types of programming errors. **[3 Marks]**
- f) Explain the aspects of a python function. **[4 Marks]**
- g) Outline any **THREE** properties of a good algorithm. **[4 Marks]**

SECTION B (Answer any TWO questions from this section)

Question Two [20 marks]

- a) Using functions, write a program that accepts any whole number from the user. The program then computes the square and reciprocal of the number and returns the result. **[8 Marks]**
- b) Outline any four features of python as a programming language. **[4 Marks]**
- c) Differentiate between source code and object code. **[4 Marks]**
- d) Outline the basic part of a high-level program. **[4 Marks]**

Question Three [20 marks]

- a) Write a program that accepts a whole number and then determines whether the number is even or odd and returns the answer. **[6 Marks]**

- b) Write a Python program that prompts a user to enter a name of a person and then print all the letters in the entered name. **[6 marks]**
- c) Write a program that stores 5 integers into a list. **[4 marks]**
- d) Write the syntax for *if ... else statement* decision making in Python. **[4 marks]**

Question Four [20 marks]

- a) Consider the following pseudocode

```
set sum to 0

get a number, num

while num is not 0 do
    addnum to sum
    get another number, num
endwhile

print sum
```

 - i) Write a python program that implements the pseudocode above **[6 Marks]**
 - ii) Draw a flow chart for the program. **[4 Marks]**
- b) Write a Python program which prints "Odd Number" if the `int` variable "number" is odd or "Even Number" otherwise. The program should prompt the user to enter the number. **[6 marks]**
- c) Explain the differences between *lists* and *tuples* data types in Python programming language. **[4 marks]**

Question Five [20 marks]

- a) Write a Python program that allows the user to enter exactly twenty non-negative floating-point values. The program then prints the sum, average (arithmetic mean), maximum, and minimum of the values entered. The program should display an error message if the user enters an integer and not a floating point value or if the value entered is negative. **[10 Marks]**
- b) Discuss the steps involved in coming up with a program solution to a problem. **[10 Marks]**