

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

**EXAMINATION FOR THE AWARD OF DEGREE
OF BACHELOR OF SCIENCE**

COSC 120: FUNDAMENTALS OF PROGRAMMING

STREAMS: BSC (COMP. SCI)

TIME: 2 HOURS

DAY/DATE: WEDNESDAY 31/03/2021

2.30 P.M. – 4.30 P.M.

INSTRUCTIONS: Answer Question ONE and ANY other TWO Questions

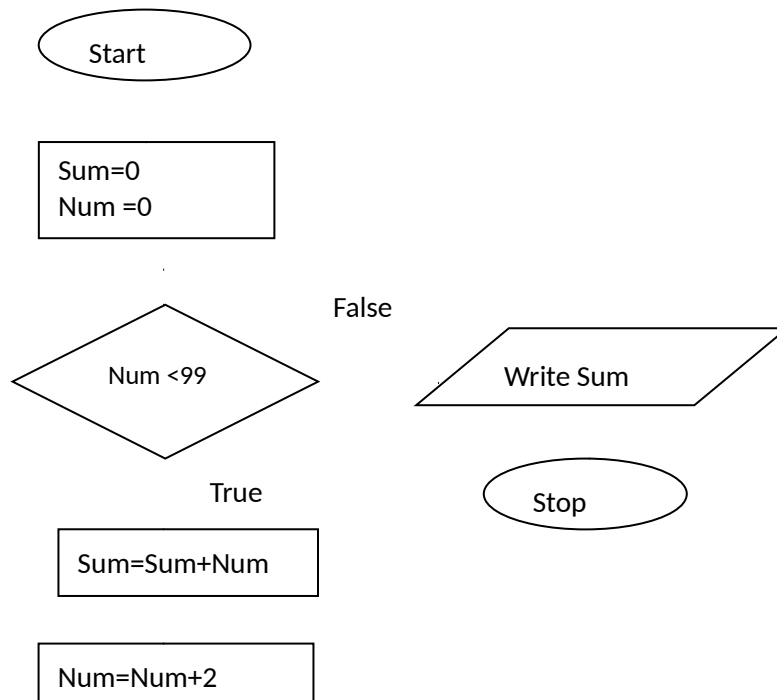
QUESTION ONE (30 MARKS)

- a) Define the following terms: (3 marks)
- i) Debugging
 - ii) Flow Chart
 - iii) Nested loop
- b) Outline **three** components of a loop. (3 marks)
- c) Identify a data type appropriate to store each of the following data items in Python program.
- i) Gender where a true or false values are used; (1 mark)
 - ii) Number of students in each Technical University in the country; (1 mark)
 - iii) The distance between two towns in kilometer rounded to 2 decimal place.(1 mark)
- d) Compare *first* and *second* generation programming languages under the following sub headings:
- i) Speed of coding. (2 marks)
 - ii) Proneness to error. (2 marks)
- e) Distinguish between *identifiers* and *reserved words* as used in Python programming language. (3 marks)

- f) Differentiate between a *pseudocode* and an *algorithm* as applied in program design. (4 marks)
- g) Distinguish between *assignment* and *relational* operators. (3 marks)
- h) Describe **three** rules of naming a variable as applied in Python programming language. (3 marks)
- i) Write a Python program that prompts a user to enter *three* integers. The program should then determine and display the largest integer. (4 marks)

QUESTION TWO (20 MARKS)

- a) Outline **three** types of errors in programming. (3 marks)
- b) Figure shows a flow chart used to solve a mathematical problem. Use it to answer the questions that follow.



- i. State the circumstance under which the loop control structure in the flow chart would be used. (2 marks)
- ii. Convert the flow chart to its Python program equivalent to solve the problem. (8 marks)
- c) Write a C program that prompts the user to enter the dimension of a square. The program should then compute the area of the square through a user defined function. (7 marks)

QUESTION THREE (20 MARKS)

- a) Distinguish between *constant* and *variable* as used in programming. (4 marks)
- b) Write a Python program that will generate integers in the range 51 to 150. (6 marks)
- c) Write a program in Python language that prompts a user to enter radius and height of a cylinder. The program then computes and displays the surface area of the cylinder using a user defined function.

*Hint: Surface area= circumference * height* (10 marks)

QUESTION 4 FOUR (20 MARKS)

- a) Define the following terms as used in Python programming. (3 marks)
 - i) Variable scope;
 - ii) Array;
- b) The following expression is an extract from Python program code.

- i. Num=Num/C
- ii. B--

Identify other ways of writing the same expression in Python. (4 marks)

- c) Write a program in Python language to prompt a user to enter an integer. The program then computes the square root of the integer and displays the results. (6 marks)
- d) Write a program in Python that will generate the following output. (7 marks)

```
AAAAAA  
AAAAAA  
AAAAAA  
AAAAAA
```

QUESTION FIVE (20 MARKS)

- a) State **four** typical components of the 4th generation programming languages. (4 marks)
- b) With the Aid of a flow chart distinguish between the while structure and the do/while structure. (6 marks)

- c) Table shows a grading system used by a primary school to analyze student's internal examination results. Use it to answer the question that follows.

Average	Grade
75-100	A
65-74	B
55-64	C
45-54	D
Less than 45	F

Write a Python program that accepts five values from the keyboard. The program then determines and output the average and its appropriate grade. (10 marks)
