

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

**EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF COMMERCE,
BACHELOR OF ENTREPRENEURSHIP AND SMALL BUSINESS MANAGEMENT
AND LIBRARY INFORMATION SYSTEM**

COSC 104: INTRODUCTION TO PROGRAMMING METHODOLOGIES

STREAMS:

TIME: 2 HOURS

DAY/DATE: FRIDAY 8/12/2017

11.30 A.M – 1.30 P.M

INSTRUCTIONS:

SECTION A: COMPULSORY

QUESTION ONE: 30 MARKS

- a) Discuss any three advantages for using functions in a program [5 marks]
- b) State and explain the five main features of C programming language (5 marks)
- c) The marks obtained by students in four subjects are input through the keyboard. Write a program in C that allows for inputting of marks for the four subjects for 30 students. The program should output the class of each student as per the following rules:

Average between 70 and 100 -First Class

Average between 60 and 69 -Second Class (Upper Division)

Average between 50 and 59 -Second Class (Lower Division)

Average between 40 and 49 -Pass

Average between 0 and 39 -Fail

(6marks)

QUESTION THREE: 20 MARKS

- a) What is abstract data? give examples (2 marks)
- b) Explain the advantages and limitations of Machine language (5 marks)
- c) Consider the following segment of a program:-

```
.....  
If (sex is male)  
{  
  If (salary > 10000)  
    Bonus=0.05 * balance;  
  Else  
    Bonus=0.02 * balance;  
}  
Else  
{  
  Bonus=0.02 * balance;  
}  
Balance=balance * bonus;
```

Required:-

- i).Identify what type of If statement is this and why? (1mark)
- ii).Explain the execution flow for the above program segment. (3marks)
- iii). Draw a well labeled flow chart to represent the above execution procedure. (3marks)
- d) Discuss the features/characteristics of a good programming language (6 marks)

QUESTION FOUR: 20 MARKS

- a) What is variable? [2 marks]
- b) What are the rules followed when naming a variable? (4 marks)

- c) Discuss how computer programming languages are being used to solve problems facing the human kind (5 marks)
- d) Write a C program that accepts student Roll number, Marks in three subjects and prints the calculated Total, Average.(It should be well commented (5 marks)
- e) Discuss the main symbols used in flowcharts (4 marks)

QUESTION FIVE:20 MARKS

- a) Explain functions of the following as used in programming :
 - i) Compiler (3marks)
 - ii) Interpreter (3 marks)
 - iii) Assembler (3 marks)
- b) Discuss the High level language in detail and give examples to support your points. (3 marks)
- c) Discuss the scope of variables. Use simple Program to illustrate. [3 marks]
- d) .Write a program that computes a person's body mass index BMI. The program should prompt the user to enter her height in meters and weight in kilograms. The program should then display the BMI number along with a message about their weight, according to the National Institute of Health official categories, i.e.

Underweight for BMI less than 18.5

Normal for BMI from 18.5 up to 25

Overweight for BMI from 25 to 30

Obese for BMI over 30

Use the formula $BMI = \text{weight} / (\text{height} * \text{height})$ to calculate the BMI.

(5 marks)