



# UNIVERSITY EXAMINATIONS

**SECOND SEMESTER 2023/2024 ACADEMIC YEAR**

**FIRST YEAR EXAMINATION FOR THE DEGREE OF  
BACHELOR OF SCIENCE (STATISTICS)**

**STAT 124: INTRODUCTION TO PROGRAMMING**

***STREAM: R***

***TIME: 2 HRS***

***DAY: WEDNESDAY[11.30A.M – 1.30P.M]***

***DATE: 10/04/2024***

**THIS QUESTION PAPER CONSISTS OF FOUR (4) PAGES**

**PLEASE DO NOT OPEN UNTIL THE INVIGILATOR SAYS SO**



**INSTRUCTIONS**

- Answer **ALL** questions in section **A** and any **TWO** questions in section **B**
- All questions in section **B** carry equal marks

**SECTION A (30 Marks)****QUESTION ONE (30 MARKS)**

- a) Distinguish between each of the following pairs of terms:
- Operator and operand (2 marks)
  - Source code and object code (2 marks)
  - Printf and Scanf (2 marks)
- b) Define the term array. Declare a two dimensional array called student. (3 marks)
- c) State the TWO ways of declaring a comment in C programming (2 marks)
- d) Discuss the role of variable declaration in C programming and write an example statement that declares a variable. (3 marks)
- e) Write a C program to accept three integers, determine the largest among them and display it on the screen. (5 marks)
- f) Define the term function and illustrate the syntax used to declare a function. (4 marks)
- g) Assume the given marks are  $y=50$  for a student If given marks are more than 80, then “Student is brilliant” If given marks are less than 40, then “Student is poor” If given marks are less than 80 and more than 40, then “Student is average”. Write a C program with the help of if conditional statements to convert the above given situation into a programming code. (7 marks)

**SECTION B: EACH QUESTION IS WORTH 20 MARKS. ANSWER ANY TWO QUESTIONS IN THIS SECTION****QUESTION TWO (20 MARKS)**

- a) A sales person for an insurance cover selling company, earns a basic salary of 40,000, a commission of 2% for all total sales for the months and a bonus of 600 for every insurance cover sold during the month. Write a C program to calculate the gross salary for a worker at the end of the month when the number of insurance covers sold is keyed in. (6 marks)
- b) Explain the following types of programming errors:



- i. Syntax error (2 marks)
- ii. Runtime error (2 marks)
- iii. Logical error (2 marks)
- c) Draw a flowchart to sum **TWO** numbers entered by user. (4 marks)
- d) Write a pseudocode for **Q2 c)** flowchart above. (4 marks)

**QUESTION THREE (20 MARKS)**

- a) Write a C program using the switch statement that will ask the user to enter a value between 1 and 7 and will print out the day of the week based on the number chosen i.e. as in 1 for Sunday to 7 for Saturday. (7 marks)
- b) Consider the following program fragment that involves a FOR loop.

```
#include <stdio.h>
int main( )
{
int x;
for(x=10; x >=3; x--)
printf("%d ", x);
return 0;
}
```

- i. Write down exactly what this loop will print. (3 marks)
- ii. Rewrite this loop as a while loop that will print exactly the same thing as the FOR loop. (4 marks)
- c) Define the term structure members. (2 marks)
- d) Write down the snippet of code that would create a structure called students. Student name, reg\_no, age, and course are the members of the structure and department is the structure variable. (4 marks)

**QUESTION FOUR (20 MARKS)**

- a) Define the following terms as used in programming:
  - i. Constant (2 marks)
  - ii. Call by value (2 marks)
  - iii. Call by reference (2 marks)

- iv. Recursion (2 marks)
- b) Explain and with the aid of a flowchart, illustrate the execution of a FOR loop. (6 marks)
- c) Write a program in C that accepts ten user input cat marks, stores them in an array and calculates then display the average mark. (6 marks)

**QUESTION FIVE (20 MARKS)**

- a) Write a C program that prompts for the input of two integer values, determines if they are both odd numbers and if they are the program outputs “THE NUMBERS ARE ODD” (6 marks)
- b) Using do...while loop structure write a C program that prints out the numbers below. (6 marks)
  - 10
  - 15
  - 20
  - 25
  - 30
- c) You have been asked to advice interns at Gebeya company the steps a program has to follow during program development life cycle. Describe these steps in details. (8 marks)

