



**JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND
TECHNOLOGY**

SCHOOL OF INFORMATICS AND INNOVATIVE SYSTEMS

**UNIVERSITY EXAMINATION FOR THE DEGREE IN COMPUTER
SECURITY AND FORENSICS /INFORMATION COMUNICATION**

TECHNOLOGY/BUSINESS INFORMATION SYSTEMS

1ST YEAR 1ST SEMESTER 2021/2022 ACADEMIC YEAR

MAIN CAMPUS

COURSE CODE: ICB 3103

COURSE TITLE: INTRODUCTION TO PROGRAMMING

GROUP: CSF/ICT/BIS

DATE: EXAM SESSION:

TIME: 2 HRS

INSTRUCTIONS

Answer question ONE and any other TWO questions

Question one [30 Marks, Compulsory]

- a) Explain how procedural programming differ from Object Oriented programming.
[3 marks]
- b) Explain the difference between: [6 marks]
 - i). Compilers and Interpreters
 - ii). Text Editors and Debuggers
- c) Write a procedural program that computes the roots of a quadratic equation.
[10 marks]

- d) Define a function that returns the greater of two numbers. Use the function in a main program where you ask the user to enter two numbers then your program outputs the greater number. [10 marks]

Question Two [20 Marks, Optional]

- a) Explain the concept of pointer in programming [6 marks]
- b) Write a procedural program to get the circumference of a circle. You should define your function before the definition of the global variable so you are recommended to use the extern keyword. [10 marks]
- c) Explain the two concepts: **pass by value** and **pass by reference** [4 marks]

Question Three [20 Marks, Optional]

- a) Explain the three control structures used in C [6 Marks]
- b) Write a procedural program that allocates the grade depending on the students score in an exam: 70 and above is A, 60-69 is B, 50-59 is C, 40-49 is D and below 40 is F (for fail) [14 Marks]

Question Four [20 Marks, Optional]

- a) Explain an ARRAY data structure [4 Marks]
- b) Write a procedural program that captures 50 numbers, accumulates sum, computes average and then displays the deviation of each number about the average [16 Marks]

Question Five [20 Marks, Optional]

- a) Write a program where the main program calls a procedure defined to calculate the area of a circle ($\pi=3.14$) and output the area in the main program [10 Marks]
- b) Give two similarities and two differences between static and local variables [4 Marks]
- c) For each of the following inbuilt functions of C outline their use, the arguments they take and their return values.
- i. `fprintf()` [2 Marks]
 - ii. `malloc()` [2 Marks]
 - iii. `strnset()` [2 Marks]

