



MACHAKOS UNIVERSITY

University Examinations for 2021/2022

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

FOURTH YEAR SECOND SEMESTER EXAMINATION FOR

BACHELOR OF SCIENCE (MATHEMATICS AND COMPUTER SCIENCE)

SPH 409: COMPUTER PROGRAMMING II

DATE: 16/12/2021

TIME: 2.00-4.00 PM

INSTRUCTIONS: Answer Question ONE and any other TWO Questions

QUESTION ONE (COMPULSORY) (30 MARKS)

- a) Define object in C++ (2 marks)
- b) Explain the use of void main() in C++ (3 marks)
 - ii) Define the term class member in C++ (3 marks)
 - iii) Outline THREE applications of OOP (3 marks)
 - iv) Differentiate between a subclass and a base class in C++ (2 marks)
- c)
 - i) Explain what is a class in C++ (2 marks)
 - ii) Use a code snippet to show how you specify a class in C++ (2 marks)
 - iii) Using a code snippet show how objects are created in C++. (2 marks)
- d) Discuss:
 - i) Dynamic binding (2 marks)
 - ii) What is namespace standard? (3 marks)
- e) Discuss THREE types of loops used in C++ (6 marks)

QUESTION TWO (20 MARKS)

- a) Explain with appropriate examples:
 - i) Call by value (4 marks)
 - ii) Call by reference (4 marks)
- b) Inheritance is one of the building blocks of object oriented programming, discuss the following in relation to object oriented programming
 - i. Describe what is multiple inheritance in C++ (3 marks)
 - ii. Using a code snippet, show how code reuse is achieved through inheritance. (5 marks)
- c) Explain FOUR classifications of functions in C++ (4 marks)

QUESTION THREE (20 MARKS)

- a)
 - i) Explain the term access specifier in C++ class (3 marks)
 - ii) Outline THREE differences between procedural and object oriented programming (3 marks)
 - iii) Outline THREE concepts of object oriented programming. (3 marks)
- b)
 - i) Describe THREE operators in C++ programming. (3 marks)
 - iv) Using a code snippet, show how operators are used in C++ (4 marks)
- c) Use a code snippet to show how polymorphism occurs clearly indicating by use comments. (4 marks)

QUESTION FOUR (20 MARKS)

- a) Using examples, show the difference between in-line function and friend function as used in C++. (6 marks)
- b) Explain the THREE types of constructors (3 marks)
- c) Explain what is encapsulation in C++ (2 marks)
- d)
 - i) Explain THREE decision making statements in C++ (3 marks)
 - ii) Write a code fragment using ONE of the statements to show how control occurs in C++ language (6 marks)

QUESTION FIVE (20 MARKS)

- a) Outline FOUR applications of OOP. (4 marks)
- b)
 - i) Explain what is private function in C++ (3 marks)
 - ii) With the aid of a code snippet, show how private functions are declared in C++ language. (3 marks)
- c) Discuss the differences between operator overloading and function overloading (6 marks)
- d) Explain TWO data types in C++ and show how they are declared (4 marks)