



MACHAKOS UNIVERSITY

University Examinations for 2021/2022

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

SECOND YEAR FIRST SEMESTER EXAMINATION FOR

BACHELOR OF SCIENCE (COMPUTER SCIENCE)

SCO200: OBJECT ORIENTED PROGRAMMING

DATE: 14/12/2021

TIME: 11:00 – 1:00 PM

INSTRUCTIONS:

Answer question ONE and any other TWO questions

QUESTION ONE (COMPULSORY) (30 MARKS)

- a) Explain the use of return statement in main() function (2 marks)
- b) State why the preprocessor directive `#include <iostream.h>` is needed in C++ (2 marks)
- c) Differentiate a main() function in C++ from main() in C (2 marks)
- d) Describe the pointer operators in C++ (4 marks)
- e) By using an example show a “enumerated data type “ (4 marks)
- f) Explain two ways to pass arguments to the function in C++ (4 marks)
- g) Analyse the different memory management operators used in C++ (4 marks)
- h) Explain the difference between Structure and Classes in C++ (5 marks)
- i) Identify the error handling function in C++ (3 marks)

QUESTION TWO (20 MARKS)

- a) Explain How the members of a class can be accessed (2 marks)
- b) Explain the characteristics of ‘static’ variables. (2 marks)
- c) Describe the properties of a friend function (4 marks)
- d) Explain the functions of constructors as used in c++. (4 marks)
- e) Print the sum, difference and product of two complex numbers by creating a class named 'Complex' with separate functions for each operation whose real and imaginary parts are entered by the user. (8 marks)

QUESTION THREE (20 MARKS)

- a) Using a C++ Illustration, explain what is a destructor (4 marks)
- b) Explain why a destructor for class Cannot be overload (2 marks)
- c) Using a do-while loop, write a program that counts values of numbers 1-6. (6 marks)
- d) Write a program to print the area and perimeter of a triangle having sides of 3, 4 and 5 units by creating a class named 'Triangle' with the constructor having the three sides as its parameters. (8 marks)

QUESTION FOUR (20 MARKS)

- a) Define a virtual base class (2 marks)
- b) Explain the types of compile time polymorphism (4 marks)
- c) Differentiate between public, private, and protected (4 marks)
- d) Write functions in C++ using function overloading to compute the area of a square, circle, triangle, rectangle (10 marks)

QUESTION FIVE (20 MARKS)

- a) Show the characteristics of streams as used in C++ (2 marks)
- b) Describe how to open a file using constructor (4 marks)
- c) Jack, an OOP student was handling C++ files in class, explain the errors that he may expect while dealing with the files (6 marks)
- d) Design a base class called shape. Use this class to store two double type values that could be used to compute the area of figures. Derive two specific classes, triangle and rectangle from the base class shape. Add to the base class a member function getdata() to initialize base class members and another member function display area() to compute and display the area of figures (8 marks)