



MACHAKOS UNIVERSITY

University Examinations for 2020/2021

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

SECOND YEAR FIRST SEMESTER EXAMINATION FOR
BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)

SIT223: OBJECT ORIENTED PROGRAMMING

DATE: 17/8/2021

TIME: 8:30 – 10:30 AM

INSTRUCTIONS

Answer question ONE and any other TWO questions

QUESTION ONE (COMPULSORY) (30 MARKS)

- a) Using c++ concepts:-
- I. Define A function (2 marks)
 - II. Explain the constituent entries of a function (3 marks)
- b) List three Operators that are not overloaded in C++? (3 marks)
- c) Difference between the keywords struct and class in C++ (4 marks)
- d) Explain access specifier(s) that can help to achieve data hiding in C++? (4 marks)
- e) 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)
- f) Explain the need for OOPs as a modern programming paradigm (6 marks)

QUESTION TWO (20 MARKS)

- a) i. Define a destructor. (2 marks)
- ii. Explain why a destructor Can/cannot be overloaded (2 marks)
- b) Differentiate Compile time Polymorphism and Runtime Polymorphism (4 marks)
- c) Differentiate between implicit and explicit type conversion in C++ (4 marks)
- d) 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) Define function overloading (2 marks)
- b) i. Highlight two other programming paradigms other than OOPs (4 marks)
ii. Describe further classifications of the paradigms cited in (c) above (8 marks)
- c) Using a do-while loop, write a program that counts values of numbers 1-6. (6 marks)

QUESTION FOUR (20 MARKS)

- a) Define a constructor. (2 marks)
- b) Differentiate between a class and object in OOP (4 marks)
- c) Explain how C++ programming language supports Polymorphism (4 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 a function to print the area and perimeter. (10 marks)

QUESTION FIVE (20 MARKS)

- a) Explain how an abstract class is different from an interface in C++ (4 marks)
- b) Explain the significance of inheritance as used in C++ (6 marks)
- c) Using a user defined class type ABC, illustrate the various types of constructors in C++ (10 marks)