MACHAKOS UNIVERSITY

University Examinations for 2020/2021

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

SECOND YEAR FIRST SEMSTER EXAMINATION FOR

BACHELOR OF SCIENCE (MATHEMATICS AND COMPUTER SCIENCE)

BACHELOR OF SCIENCE (MATHEMATICS)

SMA 391: OBJECT ORIENTED PROGRAMMING

DATE: 17/8/2021 **TIME: 8:30 – 10:30 AM**

INSTRUCTIONS

Answer Question **ONE** and other **TWO** Questions from this paper.

QUESTION ONE (COMPULSORY) (30 MARKS)

a) i) What is object oriented programming (3 marks)

ii) Outline three major differences between procedure oriented programming and object oriented programming. (6 marks)

iii) With the aid of a code snippet, show ONE basic concept of object oriented programming. (6 marks)

b) Write short notes on the following;

i) Copy constructor (2 marks)

ii) Parameterized constructor (2 marks)

c) Discus:

i) Dynamic binding (2 marks)

ii) What happens when you do not provide any constructor to a class? (3 marks)

d) Outline THREE differences between a class an object (6 marks)

QUESTION TWO (20 MARKS)

a) Outline the structure of C++ and provide a code fragment to support your answer (8 marks)

b) inheritance is one of the building blocks of object oriented programming, discuss the following in relation to object oriented programming

i. Define multiple inheritance (2 marks)

ii. Using a code snippet, show how code reuse is achieved through inheritance. (5 marks)

c) With the aid of a code snippet, explain private access modifier for class members. (5 marks)

QUESTION THREE (20 MARKS)

a) Define an *array* as used in object oriented programming? (2 marks)

b) Explain with appropriate examples:

i) Call by value (4 marks)

ii) Call by reference (4 marks)

c) Write a code program to calculate student average mark in C++ language (6 marks)

d) 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) Write a code fragment using "if statement" to show how control occurs in C++ language (6 marks)

c) Discuss the meaning of the following;

i) <iostream> in C++ (2 marks)

ii) #define (2 marks)

d) Explain destructor with the aid of an example. (4 marks)

QUESTION FIVE (20MARKS)

a) With the aid of a code snippet, explain the meaning of a private function as used in C++ language. (6 marks)

b) With the aid of a code snippet, show how operator overloading is achieved in C++ language. (6 marks)

c) Explain TWO data types in C++ and show how they are declared (4 marks)

d) Outline FOUR applications of OOP. (4 marks)