

QUESTION ONE [30 MARKS]

- a) Explain any three concepts of object oriented programming (6 marks)
- b) Discuss on inline function (5 marks)
- c) Using appropriate block diagrams, explain any three types of inheritances (6 marks)
- d) What is a constructor? Demonstrate with a simple program how a constructor is declared and defined. (5 marks)
- e) Write a program in C++ to read the name, age, sex, height and weight of a student and display with proper heading for each variable. (4 marks)
- f) Explain the following access specifiers with respect to object oriented paradigm. (4 marks)
 - a) Public
 - b) Private.

QUESTION TWO [20 MARKS]

- a) Write a program in C++ to demonstrate how one class can grant its friendship to another class to access its private data of the initial class through the public member function of the former class (6 Marks)
- b) Explain any three Predefined I/O streams in C++ programming (6 Marks)
- c) Explain the difference between a constructor and destructors citing advantages of each (4 Marks)
- d) Write an object oriented program to find the greatest number among the four variables a, b, c and d whose values are entered at run time. (4 Marks)

QUESTION THREE [20 MARKS]

- a) Explain using appropriate syntaxes the difference between While and do While control structures. (6 marks)
- b) Explain any Four applications of Object Oriented Programming (4 marks)
- c) Write a program to calculate the salary of medical representative based on the sales. Bonuses and incentives to be offered to him will be based on sales. If the sales exceeds Kshs 150,000 the following will apply
 - i. Basic Pay Kshs 30,000/=
 - ii. HRA 20% of Basic
 - iii. DA 110% of Basic
 - iv. Conveyance Kshs 5000
 - v. Incentives 10% of sales
 - vi. Bonus Kshs 15,000

(10 marks)

Hint assume that the sales has surpassed the bear minimum

QUESTION FOUR [20 MARKS]

- a) What is meant by function overloading? Explain with a simple C++ program. (8 marks)
- b) Write a program to display numbers from 10 to 1 using while loop construct. (4 marks)
- c) Explain Virtual functions and its characteristics (4 marks)
- d) Write a program to calculate sum of numbers between 1 to N numbers. The user enters the value of N. (4 marks)

QUESTION FIVE [20 MARKS]

- a) Explain the concept of polymorphism in relation to object oriented paradigm .(2 marks)
- b) Explain any four data types used in object oriented programming (4 marks)
- c) Using a syntax explain switch case statements and write snippet code to illustrate the use of a switch statement (4 marks)
- d) Explain pointers in C++ programming. (2marks)
- e) Differentiate between the following the following function (4marks)
 - i. Call by function-:
 - ii. Call by references-
- a) Explain an array and using appropriate syntax show how arrays are declared. (4 marks)