



TECHNICAL UNIVERISTRY OF MOMBASA

Faculty of Engineering & Technology

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

UNIVERSITY EXAMINATIONS FOR DEGREE IN:
BACHELOR OF TECHNOLOGY IN INFORMATION TECHNOLOGY
(BTIT 14S S-FT)

ICS 2276/EIT 4153

COMPUTER PROGRAMMING II/OBJECT ORIENTED PROGRAMMING I

END OF SEMESTER EXAMINATION

SERIES: APRIL 2015

TIME: 2 HOURS

Instructions to Candidates:

You should have the following for this examination

- Answer Booklet

This paper consists of **FIVE** questions.

Attempt question **ONE (Compulsory)** and any other **TWO** questions

Maximum marks for each part of a question are as shown

This paper consists of **TWO** printed pages

Question One (Compulsory)

- a) Define the term object oriented programming (OOP) and explain how polymorphism encapsulation and abstraction affect OOP (5 marks)
- b) Differentiate between class and an object and identify three characteristics of an object (5 marks)
- c) Write a C++ program that calculates the perimeter of a circle of radius 5.0 (5 marks)
- d) The following C++ program code extract the users a pointers. Explain each line of code (10 marks)
1. Using namespace std
 2. Int main ()
 3. {int firstvalue = 5, secondvalue = 15;
 4. int* p1, * p2;
 5. P1 = \$ firstvalue
 6. P2 = 4 second value
 7. *P1 = 10
 8. *P2 = *P1
 9. P1 = P2

10. *P1 = 20

Question Two

- a) What are processor directives? Give TWO examples (3 marks)
- b) List FOUR fundamental data types in C++ programming (2 marks)
- c) State FIVE benefits of object oriented programming (5 marks)
- d) Write a C++ program which uses a class called rectangle and an object called rect. Show how the program works (10 marks)

Question Three

The quadratic formula can be used to get the roots of any quadratic equation as follows:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Write a C++ program that can be used to implement this program (20 marks)

Question Four

- a) Describe using C++ code how the conditional ternary operator (?) works (5 marks)
- b) Illustrate with code how the following operators can be used (5 marks)
 - (i) +=
 - (ii) -=
 - (iii) *=
 - (iv) &&
 - (v) ||
- c) Write C++ program that calculates the factorial of any number (10 marks)

Question Five

- a) What is an reoverloaded function (2 marks)
- b) Illustrate with code how an overload function works (5 marks)
- c) Create a function template for the overload function in part b (7 marks)
- d) Write a C++ program that can calculate the cube root of a number (6 marks)