



TECHNICAL UNIVERISTY OF MOMBASA

# Faculty of Engineering & Technology

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

UNIVERSITY EXAMINATION FOR:  
BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING

**ICS 2276: COMPUTER PROGRAMMING II**

END OF SEMESTER EXAMINATION

**SERIES: AUGUST 2013**

**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** and any other **TWO** questions

Maximum marks for each part of a question are as shown

This paper consists of **TWO** printed pages

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**Question One (Compulsory)**

- a) Illustrate **TWO** data types used java. Give examples. **(4 marks)**
- b) Provide definitions for the following terms/phrases.
- (i) Java bytecode
  - (ii) Java virtual machine
  - (iii) Java Garbage collector
  - (iv) Java class
  - (v) Java object **(10 marks)**
- c) Identify **FOUR** access modifiers used in Java **(4 marks)**
- d) Write a java program prompts the user for a surname and prints it in uppercase **(6 marks)**
- e) Write a java program that uses string concatenation to output the following:
- a
  - a b a

aba caba  
aba ca ba da ba ca ba  
12

(12 marks)

### Question Two

a) Explain the following java programming terms/phases:

- (i) Public
- (ii) Static
- (iii) Void
- (iv) Main ()
- (v) String args [ ]
- (vi) Args [ ]

(10 marks)

b) List **FIVE** characteristics of a constructor method

(5 marks)

c) Outline **FIVE** characteristics of destructor method

(5 marks)

### Question Three

a) Explain the term method overloading and give its **TWO** advantages

(4 marks)

b) Differentiate between the **THREE** types of access specifiers, private, public and protected.

(6 marks)

c) Write a java program that prompts the user for a number and get its factorial.

(10 marks)

### Question Four

a) State the characteristics of a static data member

(4.5 marks)

b) Define the following terms:

- (i) Inheritance
- (ii) Base class
- (iii) Sub class

(4.5 marks)

c) List **THREE** types of errors in java programming

(3 marks)

d) Write java program that prompts the user for students mark and displays grade A if marks is >A = 70 B if marks greater than 60 but less than 70, C if marks greater than 50 but less than 60, D if marks greater than 40 but less than 50 un F is marks less than 40.

(8 marks)

### Question Five

a) Explain how Exceptions are handled in java

(4 marks)

b) List **THREE** similarities and **THREE** differences between interface and a class.

(6 marks)

c) Write a java program to computer load repayment period based on the following formula.

$$\text{Monthly repayment} = \frac{\text{loan amount} * \text{monthly interest}}{1 - (\text{math.pow}(1/(1+\text{monthly interest}), \text{number years} * 12)}$$

(10 marks)