



TECHNICAL UNIVERISTY OF MOMBASA

Faculty of Engineering & Technology

UNIVERSITY EXAMINATION FOR:
BACHELOR OF SCIENCE IN MATHEMATICS & COMPUTER SCIENCE
BACHELOR OF SCIENCE IN STATISTICS & COMPUTER SCIENCE
(BMCS 13J/BSSC 13J)

EIT 4253: OBJECT ORIENTED PROGRAMMING

END OF SEMESTER EXAMINATION

SERIES: APRIL 2014

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 **THREE** printed pages

Question One (Compulsory)

- a) Explain the features that allow Java to be platform independent at both the source and the binary level. **(2 marks)**
- b) Write a program that asks the user to input his/her name. Once the user does so the programme should output to screen that name in capital letters. **(5 marks)**
- c) Giving an example for each, differentiate between a syntax and a semantic error. **(4 marks)**
- d) Explain why java enforces explicit numeric casting. **(4 marks)**
- e) Explain the following:
 - (i) Encapsulation
 - (ii) Object

(iii) & &

(iv) Polymorphism

(8 marks)

f) Once you write the source code for a Java programme, in order to run the program, you will need both a java compiler and a Java interpreter. Explain what each does. (3 marks)

g) Explain the main difference between a WHILE loop and a DO WHILE loop. (2 marks)

h) Modify the following class so that the two instance variables are private and there is a getter method and a setter method for each instance variable public class player (4 marks)

```
public class player
```

```
{
```

```
    string name;
```

```
    int score;
```

```
}
```

(4 marks)

Question Two

a) Java's bytecodes are portable. Explain. (4 marks)

b) Write a FOR loop that will print out all the multiples of 2 from 2 to 18 (i.e. 2 4 6 ----18) (5 marks)

c) Compare primitive and non-primitive (or reference types) (4 marks)

d) Assuming that $x = 2$ and $y = 3$, show what the following statement displays:

```
11% / d = % n", (x + y), (+x);
```

```
system.out.print f (
```

(2 marks)

e) Evaluate the following statement.

```
x = 2% 2 * 2 - 2 / 2
```

(3 marks)

f) Write an application that displays the numbers 1 to 4 on the same line, with each pair of adjacent numbers separated by one space. (2 marks)

Question Three

a) Define the following terms as used in object oriented programming. Give suitable examples:

(i) Inheritance

(ii) Abstraction

(8 marks)

b) A certain school uses the following grading system to grade their students:

Mark 75 – 100

A

Mark 60 – 74

B

Mark 50 – 59

C

Mark <50

FAIL

Write an appropriate object oriented Java program that can be used to read in a mark and award the grade. (12 marks)

Question Four

a) Given the following code snippet:

```
public static void main (string [ ] args)
{
}
```

What is the significance of the following words:

- (i) public
- (ii) static
- (iii) void
- (iv) main
- (v) args

(10 marks)

b) Explain the role of the following packages in Java Programming Language.

(4 marks)

- (i) Java.io
- (ii) java.awt
- (iii) javax.swing
- (iv) java.applet

c) Write a for loop that can be used in a program to sort ten integers stored in an array called numbers in ascending order.

(6 marks)

Question Five

a) Describe THREE types of variables (with regards to scope) used in Java Programming language.

(9 marks)

b) Write a simple java program that can be used to display all the integers between 1 to 100 inclusive that are divisible by both 3 and 5.

(7 marks)

c) Define the following as used in object oriented programming

(4 marks)

- (i) Method
- (ii) Constructor