



TECHNICAL UNIVERISTRY OF MOMBASA

# Faculty of Engineering & Technology

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

UNIVERSITY EXAMINATIONS FOR DEGREE IN:  
BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY (BSIT 14S)

**ICS 2201: OBJECT ORIENTED PROGRAMMING II**

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 **THREE** printed pages

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**Question One (Compulsory)**

a) Distinguish between the following OOP concepts:

- (i) Object and class
- (ii) Data abstraction and data encapsulation
- (iii) Inheritance and polymorphism
- (iv) Dynamic binding and message passing

**(16 marks)**

b) Study the following specifications and answer the questions that follow:

A class STUDENT has the following details:

- Name of student
- ID Number

and another class of tested students, TESTS has:

- Marks for programming
- Marks for web design

- Method for inputting data
- Method for displaying data

and another class, SPORTS of students who do sport has

- Scores awarded
- Method for inputting data
- Method for outputting data

and finally a class, RESULTS of student tests scores and sports scores has

- Total marks from tests and sports
- Method for inputting data
- Method for displaying data

Required:

Using concept of inheritance

- (i) Draw an inheritance class diagram to represent all the classes and their members **(6 marks)**
- (ii) Write a java program to implement the above specification **(8 marks)**

### Question Two

- a) Differentiate between a local variable and a field **(4 marks)**
- b) Compare and contrast method parameter and an argument **(4 marks)**
- c) Discuss how the concept of encapsulation enhances good programming practice in OO-systems **(4 marks)**
- d) Find and debug errors in the following code segments:
  - (i) If (C<7);  
System.out.println (“C is less than 7”) **(2 marks)**
  - (ii) If (C = >7)  
System.out.println (“C is equal or greater than 7”) **(2 marks)**
- e) Write Java statements to accomplish the following tables:
  - (i) Display a dialog asking the user to enter an integer
  - (ii) Print the statement: “This is really good”  
On two lines in the console output window **(4 marks)**

### Question Three

- a) Justify the following statements in the context of java:
  - (i) Java is platform independent
  - (ii) Java is safe
  - (iii) Java is Garbage-collected
  - (iv) Java is multi-threaded **(12 marks)**
- b) Write a java program which defines a method that calculate the maximum of any given three values and displays the result in message Dialog **(8 marks)**

### Question Four

- a) Compare and contrast Abstract classes and Java Interfaces **(6 marks)**

- b) Write a method signature for a method which calculates the sum of two integers and returns the result in a message dialog box **(8 marks)**
- c) What does the statement:  
"HRow exceptionReference" do in Java? **(6 marks)**

**Question Five**

- a) Explain the FIVE states of a thread in Java programming. **(10 marks)**
- b) Show the relationship between a class and interface and a package in Java **(4 marks)**
- c) Write a java programming using a for loop that creates a multiplication table of 12 x 12 **(6 marks)**