



**JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY**  
**SCHOOL OF INFORMATICS AND INNOVATIVE SYSTEMS**  
**UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN ACTUARIAL SCIENCE**  
**WITH IT**  
**2<sup>ND</sup> YEAR 1<sup>ST</sup> SEMESTER 2018/2019 ACADEMIC YEAR**  
**MAIN CAMPUS (REGULAR)**

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**COURSE CODE:**            **SCS 202**  
**COURSE TITLE:**        **OBJECT-ORIENTED PROGRAMMING IN JAVA**  
**EXAM VENUE:**                               **STREAM: (Bsc. Actuarial)**  
**DATE: Sep-Dec 2018**                       **EXAM SESSION:**  
**TIME: 2.00 HOURS**

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**INSTRUCTIONS:**

- 1. Answer Question 1 (Compulsory) and ANY other two questions**
- 2. Candidates are advised not to write on the question paper**
- 3. Candidates must hand in their answer booklets to the invigilator while in the examination room**

**QUESTION ONE [30 MARKS]**

- a) Write a program in java that displays a 4 x 4 multiplication table on the screen. (6 marks)
- b) Differentiate between a constructor and a destructor functions with relevant syntaxes (4 marks)
- c) Enumerate the Rules for creating Identifiers in Java. ( 2 marks)
- d) An insurance company has introduced an incentive policy of giving bonus to all its educational policy holders. The policy is as follows. A bonus of 2% of the balance held on 31<sup>st</sup> December is given to every one irrespective of their balances, and 10% is given to female policy holder if their policy balance is more than Kshs 5000/=, Develop a logic structure using if else control structure and block diagram to illustrate the above statement (10 marks)
- e) The following is snippet code of simple java program. Explain in depth the meaning of each and every line of code (4 marks)

```
/*
This is a simple Java program.
Call this file "Example.java".
*/
class Example
{
// Your program begins with a call to main().
public static void main(String args[])
{
System.out.println("This is a simple Java program.");
}
}
```

- f) Define Constants and Variables as used in java Programming (4 marks)

**QUESTION TWO [20 MARKS]**

- a) Explain any two user derived data types in java (4 marks)
- b) Using a block diagram explain conditional and iterative methods of solving problems (4 marks)
- c) What are Separators, Discuss any FOUR separators in java. ( 4 marks)
- d) Discuss on Data Abstraction and Encapsulation ( 4 marks)
- e) Briefly explain some of the most common types of exceptions that might occur in java. (4 marks)

**QUESTION THREE [20 MARKS]**

- a) Write a program in java to add two matrices using arrays concept ( 6 marks)
- b) Explain the structure of Java programming language (4 marks)
- c) Discuss any six relational operators, in java and how they usage ( 6 marks)
- d) Explain the concept of polymorphism in relation to object oriented paradigm ( 4 marks)

**QUESTION FOUR [20 MARKS]**

- a) Using Switch statements, implement ATM operations ( 6 marks)
- b) Write a program to convert the given temperature in Fahrenheit to Celsius using the following formula  $C=(F-32)/1.8$  (6 marks)
- c) Briefly explain about inheritance in Java programming ( 4 marks)
- d) Explain the following controls statements using diagrams and syntaxes ( 4 marks)
  - i. While statements
  - ii. do -while statements

**QUESTION FIVE [20 MARKS]**

- a) As a programmer in a banking sector write a program to calculate the compound interest (6 marks)
- b) Using syntax explain for loop (4 marks)
- c) Develop a payroll systems program for the University staff which will accept the employee PFNo, Name, Department , Grade, Hourly rate for payment , Hours works and the flat rate of Kshs 10,000 and Kshs 20,000 for entertainment and House allowance respectively and an extra of 2% for overtime of 6 hours in a month and 5% for any over tie exceeding 6 hours. (10 marks)