



**JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY**  
**SCHOOL OF INFORMATICS AND INNOVATIVE SYSTEMS**  
**UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR SCIENCE IN**  
**SECURITY AND FORENSIC**  
**3<sup>rd</sup> YEAR 2<sup>nd</sup> SEMESTER 2022/2023 ACADEMIC YEAR**  
**MAIN CAMPUS/KISUMU CAMPUS**

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**COURSE CODE: ICB 1310**

**COURSE TITLE: Programming Distributed Components**

**EXAM VENUE:   STREAM: BSc Security and Forensic**

**DATE: JUNE/JULY 2022                   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 1**

- a) Discuss THREE elements of typical containerized application architecture. 6 marks
- b) Discuss FOUR key design principles to help you create effective container-based application architecture 8 marks
- c) Identify and explain FIVE key challenges organizations may face when ensuring that containers are compliant 10 marks
- d) Explain the FOUR Java Data Objects (JDO) models 4 marks
- e) JDBC uses the call-level approach when using the Java programming language. Write JDBC statements using the above approach. 2 marks

**Question 2**

- a) What do you understand by the term RMI (Java Remote Method Invocation). Write a code to invoke an object in the above interface. 5 marks
- b) During design and code review in Java there is the aspect of serialization. Discuss the best practices for serialization in Java 15 marks

**Question 3**

Discuss TEN advantages of a containerized architecture 20 marks

**Question 4**

What is load balancing? Discuss THREE factors affecting load balancing 10 marks

Discuss FIVE advantages of Servlets over common gateway interface 10 marks

**Question 5**

- a) Discuss FIVE Features of a web service 10 marks
- b) Styling Web Components poses some challenges, especially if you want to override scoped styles. Discuss FIVE solutions to the above challenges. 10 marks