KIRIRI WOMEN'S UNIVERSITY OF SCIENCE AND TECHNOLOGY
UNIVERSITY EXAMINATION, 2024/2025 ACADEMIC YEAR
THIRD YEAR, FIRST SEMESTER EXAMINATION
FOR THE BACHELOR OF BUSINESS AND INFORMATION TECHNOLOGY
KBI 2310 – DISTRIBUTED INFORMATION SYSTEMS AND DATA PROTECTION

Date: 11TH December 2024
Time: 2:30PM – 4:30PM

INSTRUCTIONS TO CANDIDATES
ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER TWO QUESTIONS
QUESTION ONE (30 MARKS)

a)   Discuss the various types of distributed systems and their specific use cases   (5 Marks)
b)   Analyze the challenges faced by distributed systems and propose potential solutions.   (5 Marks)
c)   Discuss the characteristics of distributed systems and how they differ from centralized systems
                                                                                                      (4 Marks)
d)   Evaluate the impact of interaction design on user experience (UX)   (3 Marks)
e)   Discuss the data storage strategies used in distributed databases, specifically focusing on replication
     and fragmentation   (5 Marks)
f)   Discuss the challenges faced in Data Vulnerability Assessment and Risk Management for distributed
     systems.   (4 Marks)
g)   Evaluate the challenges associated with distributed systems, particularly regarding communication
     performance and data consistency   (4 Marks)

QUESTION TWO (20 MARKS)

a)   Discuss the importance of effective management in distributed systems and the key aspects involved.
                                                                                               (5 Marks)
b)   Discuss the rules for creating Data Flow Diagrams (DFDs) and two of their significance.
                                                                                               (7 Marks)
c)   Discuss the concept of Remote Procedure Call (RPC) in distributed systems and explain its
     significance.   (4 Marks)
d)   Discuss the various types of distributed systems and their specific use cases.   (4 Marks)

QUESTION THREE (20 MARKS)

a)   Analyze the steps involved in effective risk management for distributed information systems
                                                                                               (6 Marks)
b)   Explain the types of data vulnerabilities prevalent in distributed information systems
                                                                                               (6 Marks)
c)   Explain best practices for effective Data Vulnerability Assessment and Risk Management
                                                                                               (8 Marks)

QUESTION FOUR (20 MARKS)

a) Discuss the challenges associated with data protection and cryptography in distributed systems.

(5 Marks)

b) Discuss the real-world examples of security breaches in distributed systems and the lessons learned.

(8 Marks)

c) Discuss the importance of data protection in distributed systems and its key objectives.   (2 Marks)

d) Discuss the role of encryption in ensuring data security in distributed systems.   (5 Marks)

QUESTION FIVE (20 MARKS)

a) Explain how distributed systems can enhance security and efficiency in one of the following scenarios: ERP systems, e-voting, or e-banking. Illustrate your answer with a case study or example, and identify one potential challenge in implementing such a distributed system in practice.   (20 Marks)