



JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY
SCHOOL INFORMATICS AND INNOVATIVE SYSTEMS
UNIVERSITY EXAMINATION FOR
THE DEGREE OF BACHELOR OF SCIENCE
IN COMPUTER SECURITY & FORENSICS
3RD YEAR 2ND SEMESTER 2024/2025 ACADEMIC YEAR
CENTRE: MAIN

COURSE CODE: ICB 1302

COURSE TITLE: ENTERPRISE SYSTEMS MANAGEMENT AND SECURITY

EXAM VENUE: LAB 9

STREAM: BSc. Computer Security & Forensics

DATE: 24/4/2025

EXAM SESSION: 9.00-11.00

TIME: 2 HOURS

Instructions:

1. Answer ANY three 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

- i. Explain the roles of TCP and DNS in network communication. **(10 Marks)**
- ii. Provide an overview of the key characteristics and uses of the following cryptographic algorithms: RSA, DSA, DES, MD5, and Blowfish. **(10 Marks)**

QUESTION TWO

- i. Describe best practices for secure file transfer protocols in an enterprise environment. **(10 Marks)**
- ii. Outline key database security practices that should be implemented to protect sensitive data. **(10 Marks)**

QUESTION THREE

Discuss various backup technologies, including SAN, NAS, RAID, and data replication, and outline essential strategies for system recovery and disaster recovery planning. **(20 Marks)**

QUESTION FOUR

- i. Explain the basics of server hardware components and the importance of energy management in a server environment. **(10 Marks)**
- ii. Explain the principles of High-Performance Computing (HPC) and provide examples of its applications. **(10 Marks)**

QUESTION FIVE

- (i.) Which of the following is NOT a principle of strong authentication? **(4 marks)**
 - a) Something you know (e.g., password)
 - b) Something you have (e.g., security token)
 - c) Something you are (e.g., biometric)
 - d) Something someone else knows (e.g. a shared secret with a friend)
- (ii.). Which access control model grants access based on predefined roles and responsibilities within an organization? **(4 Marks)**
 - a) Mandatory Access Control (MAC)
 - b) Discretionary Access Control (DAC)
 - c) Role-Based Access Control (RBAC)
 - d) Attribute-Based Access Control (ABAC)

- (iii.) Kerberos is primarily used for **(4 Marks)**
- a) Encrypting network traffic
 - b) Managing user accounts
 - c) Providing secure authentication and authorization in a network
 - d) Preventing denial-of-service attacks
- (iv.) Which of the following is a widely used directory service protocol? **(4 Marks)**
- a) SMTP
 - b) FTP
 - c) LDAP
 - d) HTTP
- (v.) In Windows Active Directory, what is the smallest unit of organization and management? **(4 Marks)**
- a) Domain
 - b) Organizational Unit (OU)
 - c) Forest
 - d) Tree

JOOUST OBSERVES ZERO TOLERANCE TO EXAM CHEATING