



JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY
SCHOOL OF INFORMATICS AND INNOVATIVE SYSTEMS
DEPARTMENT OF INFORMATION SYSTEMS
UNIVERSITY EXAMINATION FOR THE DEGREE BACHELOR OF
INFORMATION COMMUNICATION AND TECHNOLOGY
YEAR THREE: SEMESTER ONE
4TH^{YEAR} 2ND SEMESTER 2024/25 ACADEMIC YEAR
MAIN CAMPUS

COURSE CODE: ICB 1402

COURSE TITLE: INFORMATION WARFARE

DATE: 17/4/2025

EXAM SESSION: 9.00-11.00

VENUE: E-LEARNING

TIME: 2 HOURS

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 (COMPULSORY) – 30 Marks

- a) Define Information Warfare (IW) and explain its significance in modern cybersecurity. **(4 Marks)**
- b) Discuss the five major types of Information Warfare and provide real-world examples for each. **(4 Marks)**
- c) Identify and explain three key challenges that organizations face in defending against cyber-attacks. **(4 Marks)**
- d) Explain the concepts of psychological operations (PsyOps) and perception management in the context of cyber warfare. **(4 Marks)**
- e) Discuss the ethical and legal concerns related to information warfare. **(4 Marks)**
- f) Describe the following major threats to information resources and their impact on national security:
 - i) Economic espionage **(2 Marks)**
 - ii) Denial-of-service (DoS) attacks **(2 Marks)**
 - iii) Computer break-ins and hacking **(2 Marks)**
 - iv) Communication eavesdropping **(2 Marks)**
- g) What measures can organizations implement to mitigate the risks of the above threats? **(2 Marks)**

QUESTION TWO – 20 Marks

- a) Explain the process of data modification and destruction as a form of cyber-attack. **(6 Marks)**
- b) Differentiate between data distortion and data fabrication, giving an example for each. **(6 Marks)**
- c) Discuss three countermeasures used to prevent unauthorized modification of critical data in an organization. **(8 Marks)**

QUESTION THREE – 20 Marks

- a) Explain the concept of cyberspace law and its role in addressing cybercrime and information warfare. **(6 Marks)**
- b) Discuss the role of national intelligence agencies in monitoring and combating cyber warfare threats. **(6 Marks)**
- c) What are the limitations of current cybersecurity countermeasures such as intrusion detection systems and firewalls? **(8 Marks)**

QUESTION FOUR – 20 Marks

- Authentication and encryption are critical in securing information systems. Discuss the role of each in information warfare defense strategies. **(8 Marks)**
- b) Explain the significance of auditing and monitoring in detecting and preventing cyber-attacks. **(6 Marks)**
 - c) Discuss two case studies where cyber warfare activities have been deployed at the national level. **(6 Marks)**

QUESTION FIVE – 20 Marks

- a) With an elaborate diagram discuss the phases of the security systems development life cycle. **(10Marks)**
- b) What are the roles do professionals involved in information security in an organizational structure in a company strategy? **(5Marks)**
- c) To be protected from adversaries and have a successful organization, one should have multiple layers of security in place, what are they, and describe them in detail **(5Marks)**

JOOUST OBSERVES ZERO TOLERANCE TO EXAM CHEATING