



Kasarani Campus
Off Thika Road
Tel. 2042692 / 3
P. O. Box 49274, 00100
NAIROBI
Westlands Campus
Pamstech House
Woodvale Grove
Tel. 4442212
Fax: 4444175

KIRIRI WOMEN'S UNIVERSITY OF SCIENCE AND TECHNOLOGY
UNIVERSITY EXAMINATION, 2024/2025 ACADEMIC YEAR
FIRST YEAR, SECOND SEMESTER EXAMINATION
FOR THE BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY
KIT 2108 INFORMATION ASSURANCE

Date: 12TH AUGUST 2024
Time: 11:30AM – 1:30PM

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER TWO QUESTIONS

QUESTION ONE (30 MARKS)

SecureNet Inc. is a leading cybersecurity firm specializing in providing robust security solutions for its clients. The firm is focused on implementing comprehensive information assurance practices, analyzing potential risks, and deploying effective cryptographic measures to protect sensitive information.

- a) Define information assurance and explain its importance in the context of SecureNet Inc.'s operations. **(4 Marks)**
- b) Identify and discuss three key components of information assurance that SecureNet Inc. must implement to protect its clients' data. **(6 Marks)**
- c) Provide a real-world example where information assurance played a critical role in preventing a data breach. Explain the measures taken. **(4 Marks)**
- d) Discuss three key technological components used for security implementation in information Assurance **(6 Marks)**
- e) Explain different reasons why DNS monitoring is very important in any computer systems and networks. **(5 Marks)**
- f) Discuss four key security of information assurance that SecureNet Inc. must implement to protect its customer information **(5 Marks)**

QUESTION TWO (20 MARKS)

- a) Explain the purpose of an information assurance analysis model in cybersecurity. **(4 Marks)**
- b) Describe four key steps involved information assurance analysis model. **(8 Marks)**
- c) Describe the process of evaluating and mitigating threat using the analysis model. **(8 Marks)**

QUESTION THREE (20 MARKS)

- a) Define cryptography and Discuss significance in protecting information in information Assurance **(4 Marks)**
- b) Explain the differences between symmetric and asymmetric cryptography, and provide examples of each information Assurance **(8 Marks)**
- c) Describe four cryptographic methods used and their effectiveness. **(8 Marks)**

QUESTION FOUR (20 MARKS)

- a) Identify and explain three key security services provided by information Assurance. **(6 Marks)**
- b) Discuss the role of authentication in information Assurance security services and give two example of an authentication method used. **(6 Marks)**
- c) Describe three situation where information Assurance utilized encryption and access control to protect a client's data. **(8 Marks)**

QUESTION FIVE (20 MARKS)

- a) Define redundancy in the context of information systems and explain its importance for advanced redundancy measures and intrusion detection systems (IDS) **(4 Marks)**
- b) Discuss four types of redundancy (hardware and data redundancy) that redundancy measures can implement to enhance system reliability. Provide examples. **(8 Marks)**
- c) Analyse a hypothetical four scenario where experiences a hardware failure and Explain how redundancy could mitigate the impact of this failure. **(8 Marks)**