



MACHAKOS UNIVERSITY

University Examinations for 2022/2023 Academic Year

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

SECOND YEAR SECOND SEMESTER EXAMINATION FOR

BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)

SIT 230: INFORMATION SYSTEM SECURITY

DATE: 18/4/2023

TIME: 8:30 – 10:30 AM

INSTRUCTION: Answer Question ONE and any other TWO Questions

QUESTION ONE (30 MARKS)

- a) Computer security as a specialization is filled with challenges making it difficult to achieve 100% security. Discuss TWO of these challenges. (4 marks)
- b) Explain THREE attack surfaces in computer systems. (6 marks)
- c) Explain TWO challenges with symmetric encryption. (4 marks)
- d) Explain FOUR ways of authentication used in computers. (8 marks)
- e) Discuss the FOUR phases a virus undergoes before it is detected in a computer. (8 marks)

QUESTION TWO (20 MARKS)

- a) Explain the measure you would take to defend the system from DDoS attack. (8 marks)
- b) Penetration testing is a security measure of using professional hackers to determine the weaknesses of the system. Discuss any FOUR steps of achieving this task. (8 marks)
- c) Briefly explain how 3DES perform compared with DES encryption algorithms. (4 marks)

QUESTION THREE (20 MARKS)

- a) SQLInjection database attack can be accomplished through various avenues. Discuss FOUR avenues of SQLInjection attack. (8 marks)
- b) A microfinance institution is in the process of implementing a new finance system. As an expert in matters system security, explain to the management the reason they should consider security as key component of the new system. (8 marks)
- c) Explain the ransomware and how to counter it. (4 marks)

QUESTION FOUR (20 MARKS)

- a) Discuss FOUR Cloud Security as a Service categories used to secure cloud. (8 marks)
- b) A new computer security approach is needed in your organization and the top management counts on you in matters system security. Explain FOUR security design principles required in computer security. (8 marks)
- c) Explain the new concept of passwordless authentication. (4 marks)

QUESTION FIVE (20 MARKS)

- a) Discuss the FOUR types of firewalls used in computer security. (8 marks)
- b) Explain THREE aspects of computer security strategy. (6 marks)
- c) Discuss THREE cyber offenses as stipulated in the Computer Misuse and Cybercrime Act of Kenya 2018. (6 marks)