

KIRIRI WOMEN UNIVERSITY OF SCIENCE AND TECHNOLOGY

UNIVERSITY EXAMINATIONS

YEAR FOUR EXAMINATIONS FOR THE AWARD OF THE DEGREE OF BACHELOR OF  
SCIENCE IN BUSINESS INFORMATION TECHNOLOGY

KBI 2410: INFORMATION SECURITY AND SUPPORT

STREAM: YEAR FOUR SEMESTER TWO

TIME: 2 HOURS

DAY/DATE:

**INSTRUCTIONS**

Answer **QUESTIONS ONE** and any other **TWO** questions.

Write your answers legibly and use your time wisely.

This is a closed book exam. No reference material is allowed in the exam room.

No mobile phone allowed in the exam room (make sure to switch off)

**SECTION A (COMPULSORY)**

**QUESTION ONE (30 MARKS)**

- a) Differentiate between stenography and cryptography. (4 Marks)
- b) Give two main differences between conventional and digital signature. (4 Marks)
- c) List at least TWO precautions that one needs to take to protect their passwords from being used by attackers to get unauthorized access. (2 Marks)
- d) Give three main techniques of mitigating against attack on a computerized environment (3 Marks)
- e) Given a communication that applies secret key cryptography among five individuals, calculate the number of keys used. (3 Marks)
- f) List four properties that an ideal cryptographic hash function should have. (4 Marks)

- g) Explain how public key cryptography may be used for identification. (4 marks)
- h) Explain three dimensions used for categorizing cryptographic techniques. (6 Marks)

### **SECTION B (ANY TWO)**

#### **QUESTION TWO (20 MARKS)**

- a) Explain how public key cryptography may be used for identification. (4 marks)
- b) Describe in details the THREE types of information that can be used in authentication (6 Marks)
- c) Using a well labeled diagram, show the operation of data encryption standard (DES) (10 Marks)

#### **QUESTION THREE (20 MARKS)**

- a) Describe five main objectives of information system security. (10 Marks)
- b) Explain how an RSA (Rivest, Shamir & Adleman) key is created. (10 Marks)

#### **QUESTION FOUR (20 MARKS)**

- a) Using Diffie Hellman algorithm and supposing Alice and Bob agrees that  $N$  is 7 and  $\alpha$  is 3. Alice decides to choose  $X_A$  as 2 and Bob chooses  $X_B$  as 3. What is  $Y_A$  and  $Y_B$ ? Calculate the key. (10 Marks)
- b) Clearly describe secure electronic transfer (SET) transactions. (10 Marks)

#### **QUESTION FIVE (20 MARKS)**

- a) Explain FIVE main types of computer attacks that an organization may need to protect itself from. (10 Marks)
- b) On computer system, the most common form of authentication is the use of username and

password. While these two have served their purpose, they are no longer adequate in today world. Highlight and explain FIVE reasons why this is the case. (10 Marks).