

2



(Knowledge for Development)

KIBABII UNIVERSITY

(KIBU)

**UNIVERSITY EXAMINATIONS
2019/2020 ACADEMIC YEAR**

**SPECIAL/SUPPLEMENTARY EXAMINATIONS
YEAR THREE SEMESTER ONE EXAMINATION**

**FOR THE DEGREE OF
BACHELOR OF SCIENCE
(INFORMATION TECHNOLOGY)**

COURSE CODE : BIT 313

**COURSE TITLE : INFORMATION ASSURANCE
AND SECURITY I**

DATE: 11/2/2021

TIME: 2.00 P.M. – 4.00 P.M.

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTIONS ONE AND ANY OTHER TWO.

QUESTION ONE [30 MARKS]

- a. Define the following terms with respect to information assurance and security:
- i. Data (1 Mark)
 - ii. Knowledge (1 Mark)
 - iii. Encryption (1 Mark)
 - iv. Cryptosystem (1 Mark)
 - v. Asymmetric or public-key cryptography (2 Marks)
- b. You have been approached by a first student who wants to know what information security and information assurance is. Describe what you will say for this student to have a clear picture of what information security and information assurance mean. (4 Marks)
- c. Explain how an Intrusion Detection System operates to prevent illegal network and system access. (3 Marks)
- d. Physical protection of computer facilities is vital for organizations before data security became widely publicized in the media. State three reasons why physical protection of computer facilities is essential for organizations and learning institutions. (3 Marks)
- e. Outline the tools which are necessary to enable the protection of information and its related systems from danger. (4 Marks)
- f. State hence explain the difference between two different types of Intrusion Detection Systems. (4 Marks)
- g. Describe three factors that are used for authentication. Include real life examples in your description for each case. (6 Marks)

QUESTION TWO [20 MARKS]

- a. Information remains relevant to a user or organization if and only if its characteristics are not maliciously or unintentionally altered. Describe eight different information characteristics that should be maintained to ensure that information remains relevant. (8 Marks)

- b. As years go by, people with malicious intension keep coming up with new ways to pose danger to secured data. Describe how information security has evolved over the years to the current state. **(12 Marks)**

QUESTION THREE [20 MARKS]

- a. Being an expert in information security, you are hired to give consultancy services to an organization which lost its crucial information to buglers. The managing director would like to implement your advice to avoid future attacks. Explain the different measures you will advise him to implement so as to ensure there is physical security for the actual hardware and networking components that store and transmit information resources **(10 marks)**
- b. Information security measures have to be put in place in any organization to ensure that the major information principles are protected for the organization to function properly. Explain the different information principles that have to be considered for protection. **(10 Marks)**

QUESTION FOUR [20 MARKS]

- a. Describe the three main types of hackers. **(6 Marks)**
- b. For an organization to develop and execute specific information security policies and procedures, additional administrative support and technical expertise is required. Describe a setup of information security project team. **(6 Marks)**
- c. You have been hired by Kenya Commercial Bank, Nairobi branch to gain from your valuable experience in terms of information assurance and security. The prime mechanism you want to put in place to ensure the organization is secure is putting in place multiple layers of security. Before you begin this task, all the staff within the organization have to be aware of what you want to implement. *Explain the different categories of security you are going to implement to achieve this multiple layers of security.* **(8 Marks)**

QUESTION FIVE [20 MARKS]

- a. State hence explain the difference between the two main approaches which an organization can adopt in the implementation process of information security. **(4 Marks)**
- b. In your own opinion, which of the two approaches is bound to be the better option over the other. Explain. **(2 Marks)**
- c. With the aid of a diagram, clearly explain how an organization can achieve information assurance and security by adapting the already tested software development life cycle. **(14 marks)**