(Knowledge for Development)

KIBABII UNIVERSITY
(KIBU)

UNIVERSITY EXAMINATIONS
2019/2020 ACADEMIC YEAR

SPECIAL/SUPPLEMENTARY
YEAR FOUR SEMESTER ONE EXAMINATIONS

FOR THE DEGREE OF
BACHELOR OF SCIENCE
(INFORMATION TECHNOLOGY)

COURSE CODE   :   BIT 411

COURSE TITLE   :   INFORMATION
ASSURANCE AND SECURITY

DATE: 04/02/2021   TIME: 11.00A.M – 1.00 PM

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTIONS ONE AND ANY OTHER TWO.

QUESTION ONE (COMPULSARY) [30 MARKS]

a. Provide examples showing why layered defence is not sufficient for defence in depth in information assurance and security   **[4 marks]**

b. The principle of `need to know' in information security advocates that each user should have access to only as much information as needed to carry out the tasks they are assigned, and no more (least privilege access). What are potential shortcomings of such an approach to security?   **[4 marks]**

c. Sometimes people become information security risk. Analyse this statement   **[4 marks]**

d. Come up with practical controls that can be put in place to minimise risks that come about as a result of people's actions/omissions in an information system security   **[6 marks]**

e. Outline four roles of security policy in an organization   **[4 marks]**

f. Explain the concept of social engineering and come up with two ways in which one can protect him/her self from it.   **[4 marks]**

g. Differentiate between vulnerabilities and threats and with justification state which one should be properly managed to secure organizational information system   **[4 marks]**

QUESTION TWO [20 MARKS]

a. An important principle of the Defence in Depth strategy is that achieving Information Assurance requires a balanced focus on three primary elements: People, Technology and Operations. Critically analyse these three elements with respect to information assurance and security.   **[20 marks]**

QUESTION THREE [20 MARKS]

Kibabii University is implementing an electronic voting (e-voting) system to elect their student leaders. Only the students of Kibabii University are allowed to vote online at a voting website that the university IT department is implementing. What are the security attributes that need to be considered for the e-voting system? Be specific. For instance, do not just say `confidentiality', but enumerate which (all) kinds of information need to be kept confidential. Note that the security attributes could go beyond the classical three used in CIA-triad.

[20 marks]

QUESTION FOUR [20 MARKS]

Though information security is a complex technical subject, security is first and foremost a top management issue, not an IT issue. Discuss this statement.   **[6 marks]**

a. With justifications, design a convenient two factor authentication (2FA) for:

   i. Bank account
                                                            [3 marks]

   ii. Gym pass
                                                          [3 marks]

b. Outline two security concerns surround the storage of data in biometric authentication.

[2 marks]

c. You are in charge of Kibabii University wireless network. Formulate procedures that you will implement to adequately secure wireless access. Give reasons for each procedure.

[6 marks]

QUESTION FIVE [20 MARKS]

Hillary Clinton was accused of keeping classified information on her private email server she used during her tenure as a secretary of state.

a. As a security professional, briefly describe the steps you will take to prevent occurrence of such information security lapses. **[6 marks]**

b. The USA government discovered the Hillary Clinton was using her private email server after she had left the position of secretary of state. Briefly suggest the best course of action you would take to prevent any possible attack as a result of the incident giving your reasons for the chosen course of action **[3 marks]**

c. Discuss the security risks posed by her action with respect to information assurance core principles. **[4 marks]**

d. Discuss the techniques used by antivirus in detecting virus in a computer system

[7 marks]