Kirinyaga University

UNIVERSITY EXAMINATION 2018/2019

YEAR IV SUPPLEMENTARY/SPECIAL EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY

BIT 2317- Computer Systems Security Year Iv 2019

Date: Tuesday, 9th July 2019 **Time**: 8.30am – 10.30am

INSTRUCTIONS

Answer question one (compulsory) and any other two questions

Question One (30mks)

a) Define the following concepts with reference to computer security (6 Marks)

(i) Security policy

(ii) Multifactor authentication

(iii) Attack

b) With reference to computer systems security define the following terms and thorough an example illustrate how each can be achieved (6 Marks)

(i) User identification

(ii) User authentication

(iii) User authorization

c) Consider a program to accept and tabulate votes in an election.

(i) Who might want to attack the program? (2 Marks)

(ii) What types of harm might they want to cause? (2 Marks)

(iii) What kinds of vulnerabilities might they exploit to cause harm? (2 Marks)

d) Define the following term in reference to protecting programs and data security (6 marks)

(i) Copyright

(ii) Trade secret

(iii)Parent

e) List three feature that if an OS provides in a consistent and effective manner it is said to be a Trusted OS. (6 Marks)

Question Two (20mks)

a) Define the term threat (2 marks)

b) Describe any three types of threats to the KYU Examination management system (6marks)

c) Describe any three vulnerabilities that the threats stated in question 2b may exploit in order to gain access to the KYU Examination management system (6 Marks)

d) i) Define the terms Honeypot as used in computer security (2 Marks)

ii) Describe any two advantages of using Honeypots (4 marks)

Question Three 20mks)

a) Describe any two controls against program threats (4marks)

b) An ideal password authentication scheme has to with stand a number of attacks. Describe any four of these attacks. (8 marks)

c) "Passwords should be hard to guess and difficult to determine exhaustively" Describe any four guidelines for password selection that prevents passwords from being easily exploited (8 marks)

Question Four (20mks)

a) Outline any five Network characteristics that significantly increase security risks (vulnerabilities) clearly illustrating how these characteristic pose security risks to the entire network. (10 Marks)

b) Attackers have different reasons for attacking a network. State any four motives that might drive an attacker to attack a network or computer system (4 Marks)

c) One of the mechanisms for file protection is All-or-none. However, this all-or-none protection is unacceptable in today's network environment for several reasons, state any three of these reasons. (6 marks)

Question Five (20mks)

a) Describe any five network security requirements for a database system (10 Marks)

b) Most computing authentication systems must be based on some knowledge shared only by the computing system and the user. Authentication mechanisms use any of three qualities to confirm a user's identity. Discuss these three qualities (6 Marks)

c) Distinguish between risk impact and risk probability in reference to computer security. (4 Marks)