UGANDA MARTYRS UNIVERSITY

FACULTY OF SCIENCE

DEPARTMENT OF COMPUTER SCIENCE AND INFORMATION SYSTEMS

END OF SEMESTER FINAL ASSESSMENT

SEMESTER III, 2017/18

SECOND YEAR EXAMINATION FOR BACHELOR OF SCIENCE INFORMATIC TECHNOLOGY

INFORMATION SECURITY

COURSE CODE: CSC 2102

DATE: 9TH JANUARY 2018
TIME: 4:00PM – 07:00PM
DURATION: 3HRS

Instructions:

1. *Carefully read through ALL the questions before attempting*
2. *Section A is compulsory. Also, attempt any three questions from Section B.*
3. *No **names** should be written anywhere on the examination book.*
4. *Ensure that your **Registration Number** is indicated on all pages of the exa answer booklet.*
5. *Ensure your work is **clear** and **readable**. Untidy work shall be penalized*
6. *Any type of examination Malpractice will lead to automatic disqualification*
7. *Do not write anything on the questions paper.*

SECTION A (40 Marks)

Uganda Martyrs University (UMU) is Catholic faith based university based at Nkozi. UMU has a number of campuses and affiliated institutes throughout Uganda. UMU recently rolled out the Zee node University Integrated Information System. Zee node can be accessed by Students, Academic and Administrative staff in the environment of the Internet.

a) Explain any four types of malicious people who may target Zee Nodes. 4 marks

b) Explain four harmful acts malicious people mentioned in a) use to exploit Zee node. 8 marks

c) Describe any four components of Zee node and the vulnerability they may have. 8 marks

d) Explain four methods which UMU can use to defend Zee node from attacks. 8 marks

e) Explain any six principles of information security that Zee Node must adhere to. 12 marks

SECTION B

Question One (20 marks)

a) Differentiate between identification and authentication. 2 marks

b) Explain the acronym MOM as relates to attackers of the Information System. 6 marks

c) Write short notes the following: 2 marks each

i. False positives

ii. False negatives

iii. Loosely lipped systems

iv. Biometrics

d) Describe two challenges associated with biometric systems. 4 marks

Question Two (20 marks)

a) Describe cryptanalysis and its effect on an information system. 4 marks

b) Explain why keyed cryptosystems are more secure than the keyless. 4 marks

c) Differentiate between block and stream ciphers. 2 marks

d) Use Rail fence cipher (4 rows) to encrypt the following: 4 marks

MULTI LAYERED SECURITY IS AWESOME

e) Explain three attributes of sound commercial cryptosystems. 6 marks

Question Three (20 marks)

a) Define a firewall. Describe any two types of firewalls known to you. 3 marks

b) Explain four features that expose network based system to vulnerabilities. 8 marks

c) Explain how the following techniques can be used to ensure confidentiality of data accessed across computer networks.

i. Link encryption 3 marks

ii. End to end encryption 3 marks

iii. Virtual Private Networks 3 marks

Question Four (20 marks)

a) Explain how web based transactions can be securely processed using SET. 8 marks

b) Uganda Martyrs University Masaka Campus has realized the need to develop a guiding document that ensures secure use of its information assets. You are required to develop and information security policy for UMU Masaka Campus. 8 marks

c) The US military recognizes cybercrime as the fifth domain of battle after land, sea, air and space. Justify the above statement with suitable examples. 4 marks