



UNIVERSITY OF GHANA

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BSc. FIRST SEMESTER EXAMINATIONS: 2017/2018
DEPARTMENT OF COMPUTER SCIENCE
CSIT 431: DATA NETWORK SECURITY II (3 CREDITS)

INSTRUCTIONS

ANSWER QUESTION ONE COMPULSORY

THEN ANSWER ANY THREE OF THE FOLLOWING QUESTIONS FOR 15 MARKS EACH

TIME ALLOWED: TWO AND A HALF (2½) HOURS

[60 MARKS TOTAL]

Q1.

Ability Micro finance has experienced network attacks on their online banking and personal finance system infrastructure at various stages which has caused them a huge financial loss due to security implementation issues.

You have been employed as the Chief Security Officer (CIO) to analyze and identify the threats, vulnerabilities and attacks at each level of security on the network.

a) With the aid of a diagram, identify all the risk access spots on the banks online internet from the customer's computer or mobile device to the application server.

[5 Marks]

a) Explain at each stage on the diagram, the type of vulnerabilities that can be exploited, threat that can be initiated and the type of security measures that must be implemented.

[10 Marks]

Q2.

a) With examples, define firewall and explain its implementation concepts.

[5 Marks]

a) Using the principle of **Work Factor & Cost of Circumvention**, evaluate the five different types of firewalls and their vulnerabilities.

[10 Marks]

Q3.

a) With the aid of a diagram explain Symmetric and Asymmetric Encryptions models and the mathematical formulas used to encrypt data.

[5 Marks]

a) Using the four Cryptanalytic Attacks vectors, explain how attacks are initiated from Cypher Text-only attack to Chosen-Cypher text attack.

[10 Marks]

Q4.

a) Explain the difference between WEP and WPA/2. With examples give reason why you would select one against the other.

[10 Marks]

a) Explain the following kali Linux penetration testing software (Aircrack-ng) suite commands used in WEP and WPA Security.

The Kali Linux Pentest software commands suite includes:

- aircrack-ng
- airdecap-ng
- airmon-ng
- aireplay-ng
- airodump-ng

[5 Marks]

Q5.

a) With the aid of a diagram explain the three security objectives and their threat issues.

[7 Marks]

- a) Identify the CIA goals and the tolls required to ensure security controls **[8 Marks]**