



JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY
SCHOOL OF INFORMATICS AND INNOVATIVE SYSTEMS
DEPARTMENT OF COMPUTER SCIENCE & SOFTWARE ENGINEERING
UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN
INFORMATION COMMUNICATION TECHNOLOGIST
3RD YEAR 1ST SEMESTER 2016/2017 ACADEMIC YEAR
MAIN CAMPUS

COURSE CODE: ICT 3317

COURSE TITLE: FIREWALLS AND NETWORK DEFENCE SECURITYTCP

EXAM VENUE: MAIN CAMPUS

STREAM: ICT

DATE:

EXAM SESSION:

TIME:

INSTRUCTIONS

- 1. Answer Question 1 (Compulsory) and ANY other TWO questions**
- 2. Candidates are advised not to write on the question paper**
- 3. Candidates must hand in their answer booklets to the invigilator while in the examination room**

QUESTION ONE. 30 MARKS

(a) Briefly describe the following security attacks

- (i) Passive attack (3 Marks)
- (ii) Active attacks (3 Marks)

(b) Define the following terminologies as used in network information security

- (i) Authentication (2 Marks)
- (ii) Access control (2 Marks)
- (iii) Data confidentiality (2 Marks)
- (iv) Data integrity (2 Marks)
- (v) Non repudiation (2 Marks)
- (vi) Availability service (2 Marks)

(c) Briefly describe internet protocol security Tunnel Mode (4 Marks)

(d) What is the difference between an access control list and a capability ticket

(4Marks)

(e) What are the weaknesses of packet-filtering router? (4 Marks)

QUESTION TWO. 20 MARKS

(a) Describe at least three design goals for firewall. (9 Marks)

(b) List four general techniques that firewalls use to control access and enforce the site security policies. (8 Marks)

(c) Briefly describe the main purpose of internet security (IPSec). (3 Marks)

QUESTION THREE. 20 MARKS

- (a) Briefly describe the five benefits of Internet Protocol Security (IPSec).(10 Marks)
- (b) What are the three main limitations of fire wall? (6 Marks)
- (c) Briefly describe one way of securing data against Trojan Horse Attack .(4 Marks)

QUESTION FOUR. 20 MARKS

- (a) Packet filters, Application-Level Gateways and Circuit Level Gateways are three common types of firewalls. Briefly describe each type. (9 Marks)
- (b) Briefly describe three common characteristics of Bastion Host Firewall.(6 Marks)
- (c) Explain the difference between Internet Protocol version 4 (IPv4) and Internet Protocol Version 6(IPv6) (5 Marks)

QUESTION FIVE. 20 MARKS

- (a) Explain how security association may be established and why there should be the provision for transport and tunneled modes (9 Marks)
- (b) Describe in detail how IP security prevents the replay of message. (4 Marks)
- (c) Why is IP security not more extensively used in the field of electronic commerce? (3 Marks)

(d) Describe a scenario in e-commerce when IP security might be effectively used.
(4 Marks)