

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

**FIRST YEAR EXAMINATION FOR THE AWARD OF CERTIFICATE IN
COMPUTER SCIENCE**

COSC00171: COMPUTER NETWORKS AND THE INTERNET

STREAMS:

TIME: 2 HOURS

DAY/DATE: WEDNESDAY 6/12/2017

2.30 P.M – 4.30 PM

INSTRUCTIONS:

- **Answer question ONE and TWO other questions**
- **Do not write anything on the question paper**
- **This is a closed book exam, No reference materials are allowed in the examination room**
- **There will be NO use of mobile phones or any other unauthorized materials**
- **Write your answers legibly and use your time wisely.**
- **Marks are awarded for clear and concise answers.**

SECTION A (Answer ALL questions in this section)

QUESTION ONE (30 Marks)

- a. Define the following terms: (10 Marks)
- Computer network
 - Data Transfer Rate
 - File Server
 - Network Protocol
 - Web Server
- b. State and explain THREE technologies available to connect a computer to the internet (6 Marks)
- c. With the aid of a diagram, explain the process of packet switching (6 marks)

- d. While stating what they stand for, explain the difference between LAN, MAN and WAN computer networks. (6 Marks)
- e. Distinguish between Internet Backbone and Internet Service Provider (4 Marks)

SECTION B (Answer any TWO questions)

QUESTION TWO (20 Marks)

- a.) Using a diagram, explain the client/server model. (4 Marks)
- b.) Discuss the layers of the Internet Protocol Stack (10 Marks)
- c.) Briefly explain four advantages of the fiber optic cable (4 Marks)
- d.) List TWO advantages of computer networks (2 Marks)

QUESTION THREE (20 Marks)

- a. Explain the characteristics of a peer-to-peer network (5 Marks)
- b. Explain the role of the following devices in a network. (12 Marks)
 - i. Switch
 - ii. Hub
 - iii. Router
 - iv. Bridge
- c. List THREE needs of security in a computer network (3 Marks)

QUESTION FOUR (20 Marks)

- a. List any FOUR **main** uses of the Internet. (4 Marks)
- b. With the aid of diagrams, explain each of the following network topologies (6 Marks)
 - i. Mesh Topology
 - ii. Bus Topology
 - iii. Star Topology
- c. With the aid of a diagram, explain the role of a firewall in a computer network (4 Marks)
- d. State and explain THREE types of attacks that can occur in a computer network(6 Marks)

QUESTION FIVE (20 Marks)

- a. Describe the layers of the Open Systems Interconnection (OSI) Model (14 Marks)
 - b. While stating what they stand for, distinguish between TCP and UDP (6 Marks)
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