



**MASENO UNIVERSITY**  
**UNIVERSITY EXAMINATIONS 2013/2014**

FIRST YEAR SECOND SEMESTER EXAMINATIONS FOR THE  
DEGREE OF BACHELOR OF SCIENCE IN INFORMATION  
TECHNOLOGY

(CITY CAMPUS – EVENING)

CIT 113: DATA COMMUNICATION

Date: 17<sup>th</sup> July, 2014

Time: 5.30 – 7.30 p.m.

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**INSTRUCTIONS:**

1. **SECTION A: Attempt Question 1 (COMPULSORY) 30 marks**
2. **SECTION B: Attempt ANY TWO questions 20 marks each.**
3. **Start a new question on a new page.**
4. **MOBILE PHONES are PROHIBITED in the examination room.**
5. **DO NOT WRITE on the question paper.**



Question 1: – Compulsory [30 Marks]

- a. Define the following terms as used in computer networking [5 Marks]
  - i. Data Communication
  - ii. Network
  - iii. Internet
  - iv. Bandwidth
  - v. DTE equipment
- b. Differentiate between Multicast and Broadcast Network as applied in computer networking [2 Marks]
- c. List Two and Disadvantages of bus topology [4 Marks]
- d. Describe Elements of a communication system, with aid of a well labeled Block diagram of a typical communication system [6 Marks]
- e. State the main objectives OSI Reference Model as part of by International Standards Organization towards international standardization of the protocols [2 Marks]
- f. What does the term CSMA/CD refer to and state its role in data communication [3 Marks]
- g. What are the factors that have led to emergence of Optical Fiber as popular Data Transmission medium being deployed throughout Nairobi and its environments by most internet service providers. [4 Marks]
- h. Discuss the difference between the following Network Devices. [4 Marks]
  - i. Hubs and Switches
  - ii. Gateway and Routers

**Question 2: [20 marks]**

- a. List Two design factors relating to the transmission medium and the signal determine the data rate and distance: [2 Marks]
- b. Differentiate between Baseband and Broadband types of Coaxial cable. [2 Marks]
- c. With aid of diagram differentiate Peer-to-Peer Networks vs Client/Server Networks [6 Marks]
- d. Discuss Five the Applications of Computer Networks a modern office setup [10 Marks]

**Question 3: [20 marks]**

- a. Differentiate between Guided Media and Unguided Transmission medium [2 Marks]
- b. Describe three factors that should be considered when choosing a network topology in data communication and computer networking [6 Marks]
- c. With aid of illustration discuss the following types of network topologies [9 Marks]
  - i. Star Topology
  - ii. Tree Topology
  - iii. Mesh Topology
- d. State three functions of networking devices in a computer Network. [3 Marks]

**Question 4: [20 marks]**

- a. What is the difference between Attenuation and Distortion Transmission Impairments [2 Marks]
- b. What is Noise and state two types of noise experience transmission mediums in data communication systems [2 Marks]
- a. (i) What are two main objectives OSI Reference Model as part of by International Standards Organization towards international standardization of the protocols [2 Marks]  
(ii) State and briefly discuss the Seven Layers of the OSI Model [14 Marks]

**Question 5:[20marks]**

- a. Define the term Multiplexing and state its role in data communication [2Marks]
- b. Differentiate between Frequency Division Multiplexing (FDM) and Time Division Multiplexing channel sharing techniques in data communication and networking [4 Marks]
- c. With aid of diagram describe the following different types of computer networks [9 Marks]
  - i. Local Area Network (LAN).
  - ii. Metropolitan Area Network (MAN).
  - iii. Wide Area Network (WAN).
- d. Describe the following switching techniques as used in data communication and Networking [5 Marks]
  - i. Circuit switching
  - ii. Message Switching