



MASENO UNIVERSITY
UNIVERSITY EXAMINATIONS 2013/2014

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

(CITY CAMPUS - EVENING)

CIT 203: COMPUTER NETWORKS

Date: 14th July, 2014

Time: 5.30 – 7.30 p.m.

INSTRUCTIONS:

1. This paper contains two sections, SECTION A and SECTION B.
2. Section A carries a total of 30 marks.
3. Each question in Section B carries a total of 20 marks.
4. Attempt ALL questions in SECTION A and ANY TWO questions in SECTION B.

SECTION A

QUESTION ONE (30 MARKS)

- a. Using examples distinguish the major categories of computer networks based on the distance they span and the manner in which they are administered. (3 Marks)
- b. Using examples describe with the help of diagrams how Server based networks differ from peer-to-peer networks. (3 Marks).
- c. Define the term Protocol Data Unit (PDU) and describe the concept of segmentation and encapsulation with respect to the communication process over a data communication network. (3 Marks).
- d. Describe the significance of repeaters in computer networks. (3 Marks).
- e. Describe clearly the difference between bridges and router in internetworks. (3 Marks).
- f. Define the term network media and using examples describe the major categories of network media that institutions utilize to connect together devices internally and externally. (7 Marks).
- g. You have been asked to assist an institution acquire switches to expand the Local Area Network in the institution. Discuss any four major things you would take into account about the switches as you plan to acquire them. (8 Marks).

SECTION B

QUESTION TWO (20 MARKS)

- a. Using appropriate examples describe the four main elements of a typical computer network system. (4 Marks).
- b. Differentiate the following in computer networks. (8 Marks).
 - i. SONET/SDH(Synchronous Optical Networking/Synchronous Digital Hierarchy)
 - ii. ATM (Asynchronous Transfer Mode)
- c. Describe in detail the following WAN connection technologies.
 - i. X.25. (4 Marks).
 - ii. Frame Relay. (4 Marks).

QUESTION THREE (20 MARKS)

- a. Using examples differentiate between physical topology and logical topology in computer networks. (4 Marks).
- b. Describe the meaning and significance of Virtual Private Network. (4 Marks).
- c. State any four factors one would consider in selecting network media. (4 Marks).
- d. Discuss the advantages of fiber over copper wire in computer networks. (8 Marks)

QUESTION FOUR (20 MARKS)

- a. Describe the role of Network Interface Cards in data networks. (4 Marks).
- b. Explain the meaning of Subnet Masking. (4 Marks).
- c. Explain the relationship between IPV4 and IPV6 address standards. (4 Marks).
- d. Using a diagram compare the abstraction layers of the TCP/IP protocol model and the OSI reference model. (4 Marks).
- e. Explain the functions of each of the abstraction layers of the TCP/IP model. (4 Marks).

QUESTION FIVE (20 MARKS)

- a. Discuss the significance of Gateways in internetworks. (4 Marks).
- b. State the characteristics that network architectures must exhibit in order to meet user needs. (4 Marks).
- c. State and explain the advantages of subnetting. (4 Marks).
- d. Give a brief description of the following network protocols. (8 Marks).
 - i. UDP
 - ii. ICMP
 - iii. ARP
 - iv. DHCP