



MURANG' A UNIVERSITY COLLEGE

(A constituent College of Jomo Kenyatta University of Agriculture and Technology)

UNIVERSITY EXAMINATIONS 2014/2015

**YEAR TWO SPECIAL/SUPPLEMENTARY EXAMINATION FOR THE DEGREE OF
BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY**

BIT 2116 ICS2216: NETWORK DESIGN & MANAGEMENT

COURSE: BscIT&BBIT

TIME: 2HRS

DAY/TIME: Thursday 8:00am-10:00am

DATE: 6th August 2015

INSTRUCTIONS: Answer question one and any other two questions

QUESTION 1: [30 MARKS]

- a) Define the following terms as used in computer networks. (3marks)
- i) Computer network
 - ii) Attenuation
 - iii) Protocol
- b) Briefly explain the seven layers of the OSI reference model (7marks)
- c) List four advantages of a server based network. (4marks)
- d) Differentiate between the following; (6marks)
- i) CSMA/CD and Token passing access methods
 - ii) Physical topology and logical topology
 - iii) Half duplex and full duplex
- e) State the major benefit and drawback of fiber optic cable. (2marks)
- f) Explain the importance of the following: (4mark)
- i) MAC address
 - ii) IP address
- g) Distinguish between UDP and TCP protocol found in the transport layer of the of the TCP/IP protocol structure. (4marks)

QUESTION 2: [20 MARKS]

- a) Explain the terms parallel and serial data transfer modes. (4marks)
- b) List down four different types of network cables and for each cable specify the maximum distance that it can carry data without requiring a repeater. (4marks)
- c) Using a diagram, discuss which device and media you would use in a star-ring topology and give reasons for your choice. (4marks)
- d) Discuss the 5-4-3 rule with the aid of a diagram. (4marks)
- e) Ethernet hubs are sometimes referred to as "bus in a box." Similarly, token ring MAUs have been referred to as a "ring in the box." Why is this so? (4marks)

QUESTION 3: [20 MARKS]

- a) Briefly explain the following under data transmission in wide area networks: (4marks)
 - i) Packet switching
 - ii) Circuit switching
- b) State and explain three factors that can be considered when selecting a network topology. (6marks)
- c) Briefly explain how you would do the following in windows environment:
 - i) Share a folder on a peer-to-peer network. (3marks)
 - ii) Install a NIC. (4marks)
 - iii) State three examples of operating systems you know. (3marks)

QUESTION 4: [20 MARKS]

- a) Describe, with specific examples, four uses of computer networks. (4marks)
- b) Briefly discuss two distinguishing features of a local area network (LAN) and a wide area network (WAN) (6marks)
- c) Differentiate between guided and unguided transmission media. State two examples of each. (4marks)
- d) Explain the advantages of synchronous over asynchronous communication. (4marks)
- e) Briefly describe two types of servers that can be found in a network. (2marks)