



MURANG'A UNIVERSITY COLLEGE
(A constituent College of Jomo Kenyatta University of Agriculture and Technology)
UNIVERSITY EXAMINATIONS 2014/2015
YEAR ONE SEMESTER TWO EXAMINATION FOR THE BACHELOR IN
INFORMATION TECHNOLOGY
BIT 2108 COMPUTER NETWORK

COURSE: B.Sc.IT

DURATION: 2 HOURS

DAY/TIME: Monday 8:30-10:30AM

DATE: 20th April 2015

Instructions: Answer Question One and Any Other Two

QUESTION ONE [30 MARKS]

- a) Define the following terms as used in computer networks.
- i) Computer network
 - ii) Attenuation
 - iii) Protocol
 - iv) CrossTalk
 - v) Bandwidth (5marks)
- b) Briefly explain the seven layers of the OSI reference model (7marks)
- c) Discuss four advantages of a server based network. (4marks)
- d) Differentiate between the following;
- i) CSMA/CD and Token passing access methods
 - ii) Physical topology and logical topology
 - iii) Half duplex and full duplex
 - iv) IP address and MAC address (8marks)
- e) You are required to select a topology for the corporate network's backbone. Your decision, which is to look at only inter-server (not workstation) connectivity, needs to reflect speed and fault tolerance.
- Primary objective: the topology needs to have total fault tolerance, in case of a cable break. Secondary objective: large data throughput is required.
- i) Suggest appropriate logical and physical topology for this network. (2mark)
 - ii) Discuss your suggested solution (2mark)
- f) State the major benefit and drawback of fiber optic cable. (2mark)

QUESTION 2

- a) Explain the terms parallel and serial data transfer modes. (4marks)
- b) Discuss 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

- 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

- 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) (4mark)
- c) Differentiate between guided and unguided transmission media. State two examples of each. (2mark)
- d) Explain the advantages of synchronous over asynchronous communication. (2mark)
- e) Briefly describe two types of servers that can be found in a network. (2mark)
- f) i) State the functions of a network interface card (NIC) adaptor card. (4 marks)
- iii) Briefly discuss any two factors that will influence the choice of NIC for a particular computer (2 marks)