

**KENYA METHODIST UNIVERSITY
FIRST TRIMESTER EXAMINATION
APRIL 2009**

**FACULTY : ARTS & SCIENCES
DEPARTMENT : COMPUTER INFORMATION SYSTEMS
COURSE CODE : CISY 433
COURSE TITLE : NETWORK HARDWARE & CONFIGURATION
TIME : 2HRS**

Instructions: Attempt Question 1 and any other two questions.

SECTION A

QUESTION 1 (30 Mks)

- a) By use of a diagram illustrate the Basic Communication Model on which Computer Networks are based and give an example of how it is similar to human communication. (4Mks)
- b) A client wishes you to design a networking device that will interoperate with other devices, is portable and the system in which it should work should be transparent. Explain how the layering approach adapted in the Open System Interconnection Reference Model will assist you in this function. (6 Mks)
- c) Describe any three common parameters of performance of any transmission media (3 Mks)
- d) Differentiate between bounded and unbounded media. Describe two examples of each (4 Mks)
- e) Signal picks up unwanted random energy, explain 3 such transmission impairments (3 Mks)
- f) State and explain any five computer network protocols (5 Mks)
- g) Describe Ethernet in general (5 MKs)

QUESTION 2 (15 Mks)

- a) A computer network is created when two or more computers are wired together to share information and resources. Briefly explain five other motivations for computer networks (5 Mks)
- b) Using the Open System Interconnection Reference Model explain how data moves from a computer to the hub, the bridge, router and finally the Internet. (10 Mks)

Question 3 (15 Mks)

- a) In the context of putting data on the cable briefly describe the 5 major access methods (5Mks)
- b) A small public relations firm leases two groups of offices in Building A and Building C of a suburban office park. The business staff, including human resources and accounting has 12 people and is located in two offices in building A. The creative staff, including copy writing, graphics and

production, with a total of 22 employees, is in Building C. Building A and Building C are about 600 metres apart.

The business staff is networked with a coaxial bus that ties their computers in a peer-to-peer workgroup.

The creative staff in Building C has a conglomeration of computers including Apple Macintoshes and personal computer - compatibles. They are not networked.

The owners of the company would like to network all of the computers for the creative staff, and connect the creative staff network to the business staff network. They would also like to standardize on the type of network used in both buildings to keep troubleshooting issues to a minimum

Suggest a network solution to the owners and give a rationale to your decisions. (10 Mks)

Question 4 (15 Mks)

- a) Describe what role a network adapter card plays as a connectivity device in networked communications. (5 Mks)
- b) A magazine publisher based in Nairobi has a branch in Kisumu, and one in Mombasa. The company has kept in touch by telephone and courier service. Each office is networked. The networks were implemented five years ago and each has a 10 Base 5 Ethernet network.

Lately the company has been developing projects that involve teams consisting of members from more than one office. Each office has resources that others do not; the current projects require all of these resources.

The networks have frequent cable problem, and each time they have one, the entire network goes down until the problem is resolved.

The management team would like a networking solution which would offer easier troubleshooting, less down time, and WAN Communications between sites. They would like the WAN Connections to support 256 Kbps of data and several telephone conversations. The combination of long distance calls and courier service should be eliminated by the WAN. Management would like the WAN to be able to continue operation even if one of the WAN links fails.

- i. Identify at least two items at every site that needs upgrading
- ii. What type of WAN connection (link) might you use to connect the three sites to each other?
- iii. How many WAN connections will it take to connect the three sites? Show the links in a diagram
- iv. What type of device could be used to connect the multiple signals for both voice and data and put them on the same WAN link?
- v. What type of connectivity device should be used to connect the LAN to the multiple paths in the WAN created?

(10 Mks)