THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of JKUAT)

Faculty of Engineering & Technology

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY (BSCIT/MAY2011)

BIT 2116: NETWORK DESIGN & MANAGEMENT

SPECIAL/SUPPLEMENTARY EXAMINATION
SERIES: MAY/JUNE 2012
TIME: 2 HOURS

Instructions to Candidates:
You should have the following for this examination
- *Answer Booklet*

This paper consist of **FIVE** questions
Answer any **THREE** questions. Question **ONE** is Compulsory
Maximum marks for each part of a question are as shown
This paper consists of **TWO** printed pages

SECTION A (Compulsory - 30 marks)

Question One (30 Marks)

a) Read the following CASE to answer the questions that follows:

This case study addresses the decisions involved in determining when a LAN should implement a repeater, bridge, or router. The company in question is a medium-size firm with roughly 100 employees. They are currently running a LAN utilizing a single cable segment. The users of this LAN are finding that is taking a relatively long time to download files from one of their two centralized file servers. This company has two distinct groups: the sales group and the support group. Each group accesses its own server. Due to the long waits, the company has called you in to explore various options for speeding up the throughput on the LAN. The owners of the company have heard of the terms “repeater”, “bridge” and “router” and say that their LAN supplier has mentioned that their company should purchase all three devices.

Required facts of the CASE:

- Too much traffic on the network is the problem, slowing access and bringing the productivity of the workers down.
- You must be able to define the purpose or function of a repeater, bridge and router if you are to see which device is a solution for the problem.

- To be able to explain why you are proposing which device to implement, you need to understand at which layer in the OSI model different components or services run
- You want to make sure that the solution you are going to provide to the company is not going to become obsolete with the advent of new technology. (10 marks)

a) State **THREE** main methods that are used to identify and analyze a customer's existing network environment (3 marks)

b) List and explain the network design steps (12 marks)

c) State **FIVE** types of information that need to be gathered about the existing network. (5 marks)

SECTION B (Answer any TWO questions – 40 Marks)

Question Two (20 marks)

a) Describe the following elements of networking:
   i) Fault management
   ii) Configuration management
   iii) Configuration documentation (12 marks)

b) What is a media access method (2 marks)

c) Discuss the following Media Access methods:
   i) Polling
   ii) Token passing

Question Three (20 marks)

a) List and explain any **FOUR** factors to consider when implementing a network. (8 marks)
b) Discuss any **THREE** types of addresses used in a network (6 marks)
c) Explain any **TWO** tools system administrators that can be used to measure network usage (6 marks)

Question Four (20 marks)

a) Discuss any **TWO** data protection solution that can be used to avoid the possibility of system failure and associated downtime in a network. (8 marks)

b) Define Fault-tolerance (2 marks)

c) Discuss any **THREE** fault tolerant options (6 marks)

d) Define fault management (2 marks)

Question Five (20 marks)

a) Describe any **FOUR** data gathering process needs that are associated in any new planned services, applications, and features required for the new or upgraded network (8 marks)

b) Outline any **FOUR** details that should be included in implementation plan documentation (4 marks)
c) Explain any **FOUR** goals of network design (8 marks)