



KENYA METHODIST UNIVERSITY

END OF 2ND TRIMESTER 2010 EXAMINATIONS

FACULTY : **SCIENCE AND TECHNOLOGY**
DEPARTMENT : **COMPUTER SCIENCE & BUSINESS INFORMATION**
UNIT CODE : **CISY 432 / BBIT 413**
UNIT TITLE : **DISTRIBUTED SYSTEMS**
TIME : **2 HOURS**

Instructions:

- Answer Question 1 and any other 2.

Q 1 [Compulsory 30 MKS]

- a. Differentiate between:- [6 MKS]
- Tightly-coupled and loosely-coupled systems
 - Multicasting and unicasting
 - Blocking versus Nonblocking Primitives
- b. What is an RPC? Explain the working principle behind RPCs. [4 MKS]
- c. For a distributed processing to be implemented successfully Transactions must have FOUR essential properties. Give and explain each. [8 MKS]
- d. Explain four strategies that are used in management of deadlocks in a distributed system? [8 MKS]
- e. Explain the following terms as used in a distributed filing system:- SNS, DNS [4 MKS]

Q 2

- a. Explain any four transparency design issues in relation to design of distributed systems. [8 MKS]
- b. What is the purpose of introducing groups in a distributed system? [2 MKS]
- c. Explain three ways of how groups can be addressed when dealing with group addressing. [6 MKS]
- d. Differentiate between load balancing and process migration. [4 MKS]

Q.3

- a. Explain how scalability is achieved in a distributed system. [2 MKS]
- b. Explain three popular network protocols that support distributed systems in the OSI model and state clearly in which layer of the OSI they operate. [6 MKS]
- c. Explain the working principle of Christian's Algorithm, Bully Algorithm, Berkeley algorithm and Averaging Algorithms [12 MKS]

Q 4.

- a. Give the three Advantages and three Disadvantages of distributed systems over Centralized Systems. [6 MKS]

- b. Differentiate between Closed Groups and Open Groups. [2 MKS]
- c. Present and explain three different kind of concurrency control in a distributed system. [6 MKS]
- d. Give two reasons that make RPC popular. [2 MKS]
- e. Differentiate between monolithic kernels and microkernel. [4 MKS]