



# KENYA METHODIST UNIVERSITY

## END OF 1<sup>ST</sup> TRIMESTER 2010 EXAMINATIONS

**FACULTY** : **COMPUTING AND INFORMATICS**  
**DEPARTMENT** : **COMPUTER INFORMATION SYSTEMS**  
**UNIT CODE** : **CISY 432**  
**UNIT TITLE** : **DISTRIBUTED SYSTEMS**  
**TIME** : **2 HOURS**

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### Instructions:

- Answer question 1 and any other 2 questions.

### Question 1 (30 marks)

- Give two reasons why distributed systems have become popular in recent times. (2 mks)
- Differentiate loosely coupled and tightly coupled distributed systems. (4 mks)
- Describe a distributed system. Describe any three models used to build distributed systems. (7 mks)
- Explain three software architectures that support distributed systems. (6 mks)
- The main problem of sharing distributed memory is maintaining consistency in the various pieces of data being shared. Describe the various consistency models used to address this problems. (6 mks)
- Name the two main components of a distributed file systems. (3 mks)

### Question 2 (20 marks)

- Describe three issues that emerge in the design of distributed systems. (6 mks)
- Give two advantages of layering in protocol design (2 mks)
- Explain any five design issues to consider a distributed system. (4 mks)
- Outline three desirable features of a good message passing system. (6 mks)
- What do you understand by distributed shared memory? (2 mks)

### Question 3 (20 marks)

- In IPC, how does the receiving process know that the message has arrived in the buffer? Explain the two techniques used. (4 mks)
- State and explain three advantages of distributed databases. (6 mks)
- Differentiate between TCP and UDP transport protocols. (2 mks)
- Discuss two binding techniques used by clients. (4 mks)
- Briefly explain two techniques used by middleware to achieve true transparency in Network Operating Systems. (4 mks)

**Question 4 (20 marks)**

- a) Outline three advantages of distributed shared memory. (3 mks)
- b) Explain two differences between traditional IPC and RPC. (4 mks)
- c) Describe using relevant illustrations the RPC model. (8 mks)
- d) Give five transparencies associated with distributed file systems. (5 mks)