



MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

University Examinations 2011

Higher Diploma in Computer Studies- HDIP 10A

DISTRIBUTED SYSTEMS ECT 3109

INSTRUCTIONS

This paper contains five questions

Answer **Question ONE** and any other **TWO** questions

TIME: 2 HOURS

INSTRUCTIONS

This paper contains five questions

Answer **Question ONE** and any other **TWO** questions

QUESTION ONE (30 Marks)

- a) Define the following terms as used in distributed system
- a) Middleware
 - b) Marshalling
 - c) Process (6 marks)
- b) Define transparency in a distributed system. Enumerate and explain three aspects of transparency. (6 Marks)
- c) Explain the Lamport's algorithm (5 Marks)
- d) Explain two examples of distributed systems (2 Marks)
- e) Differentiate between synchronous and asynchronous communication (4 Marks)
- f) Explain two advantages of distributed systems (4 Marks)
- g) List three techniques employed to implement a scalable, fault tolerant directory service. (3 Marks)

QUESTION TWO (15 Marks)

- a) With examples describe the client server model? (5 Marks)
- b) Discuss three challenges in the design of distributed systems. (6 Marks)
- c) Explain two ways to achieve mutual exclusion in Distributed system (4 Marks)

QUESTION THREE (15 Marks)

- a) With examples illustrate the difference between passive and active replication. (4 Marks)
- b) Explain three types of fault (6 Marks)
- c) Explain three types of failure models (5 Marks)

QUESTION FOUR (15 Marks)

- a) Explain any two features of good distributed file system (4 Mark)
- b) Differentiate between mutable and immutable files (4 Marks)
- c) Name three advantages of file replication (3 Marks)
- d) Briefly explain four methods of handling deadlocks in distributed systems (4 Marks)

QUESTION FIVE (15 Marks)

- a) Define a **fault** (1 Mark)
- b) With the help of a diagram, describe the Remote Procedure call steps (10 Marks)
- c) Explain four goals of computer security (4 Marks)