



# THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of JKUAT)

*Faculty of Engineering & Technology*

DEPARTMENT COMPUTER SCIENCE & INFORMATION TECHNOLOGY

HIGHER DIPLOMA IN COMPUTER STUDIES

**ECT 3109: DISTRIBUTED SYSTEMS**

SPECIAL/SUPPLEMENTARY EXAMINATION

**SERIES: FEBRUARY/MARCH 2012**

**TIME: 2 HOURS**

## **Instructions to Candidates:**

You should have the following for this examination

- *Answer Booklet*

This paper consist of **FIVE** questions in **TWO** sections **A & B**

Answer question **ONE (COMPULSORY)** and any other **TWO** questions

Maximum marks for each part of a question are as shown

This paper consists of **TWO** printed pages

## SECTION A (COMPULSORY)

### Question one (30 Marks)

- a) Explain **two** advantages of distributed systems (4 Marks)
- b) Describe *Location* and *Migration* transparency in a distributed system. (4 Marks)
- c) Differentiate between a transient and a persistent communication (4 Marks)
- d) Briefly explain **four** properties of a transaction (4 Marks)
- e) Explain **three** services of a distributed file system (6 Marks)
- f) Briefly explain **four** methods of handling deadlocks in distributed systems (4 Marks)
- g) differentiate between iterative and recursive name resolution (4 Marks)

### SECTION B (Answer any two questions)

#### Question Two (15 Marks)

- a) With the help of a diagram, explain the Distributed Operating System (5 Marks)
- b) With the help of a diagram, describe the Remote Procedure call steps (10 Marks)

#### Question Three (15 Marks)

- a) Explain the following terms as used in distributed system.
  - i) Physical Clocks
  - ii) Logical Clocks
  - iii) Distributed processing
  - iv) Multicasting
  - v) Directory service (10 Marks)
- b) Explain **two** Models of communication in a distributed system (5 Marks)

#### Question Four (15 Marks)

- a) Differentiate between structured and unstructured files (4 Marks)
- b) Differentiate between explicit and implicit replication (4 Marks)
- c) Explain replication transparency in files (5 marks)
- d) Briefly explain **two** security threats in database systems (2 Marks)

#### Question Five (15 Marks)

- a) Explain the Timestamp as a concurrency control approach (5 Marks)
- b)
  - i. Define middleware (1 Mark)
  - ii. Explain three types of middleware (9 Marks)