THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of JKUAT)

(A Centre of Excellence)

Faculty of Engineering & Technology

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

DIPLOMA IN INFORMATION COMMUNICATION TECHNOLOGY
(DICT 2K 10J)

ECT 2309: DISTRIBUTED SYSTEMS

SPECIAL/SUPPLEMENTARY EXAMINATION
SERIES: OCTOBER 2012
TIME: 2 HOURS

Instructions to Candidates:

You should have the following for this examination

- *Answer Booklet*

This paper consist of **FIVE** questions
Answer question **ONE** 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) Differentiate between the following:
   i) Synchronous and Asynchronous Communication
   ii) Iterative and Recursive Name Resolution **(8 marks)**

b) Name **THREE** techniques needed to implement a scalable, fault tolerant directly service. **(3 marks)**

c) List **SIX** elements of a distributed system. **(3 marks)**

d) Explain **TWO** advantages of distributed systems. **(4 marks)**

e) Explain **THREE** types of faults. **(6 marks)**

f) Explain **TWO** types of distributed systems. **(4 marks)**

g) Explain the term "fault tolerance as used in distributed system" **(2 marks)**

SECTION B (Answer Any Two Questions)

Question Two (15 marks)

a) Differentiate the **THREE** name space layers of name spaces. **(6 marks)**

b) Differentiate between mutable and immutable files. **(4 marks)**

c) With the aid of a diagram, explain the concept of distributed shared memory. **(5 marks)**

Question Three (15 marks)

a) Explain **THREE** types of communication models in distributed systems. **(6 marks)**

b) Explain any **TWO** distributed software. **(4 marks)**

c) Explain the Lamport's algorithm. **(5 marks)**

Question Four (15 marks)

a) Explain **THREE** types of failure models. **(6 marks)**

b) Explain **TWO** ways a distributed system can achieve mutual exclusion. **(4 marks)**

c) State and explain **THREE** advantages of file replication. **(5 marks)**

Question Five (15 marks)

a) Explain the different approaches to routing a group message in the group model. **(6 marks)**

b) Briefly explain **FOUR** methods of handling deadlocks in distributed systems. **(4 marks)**

c) With the use of a diagram, explain middleware. **(5 marks)**