THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE
(A Constituent College of JKUAT)
(A Centre of Excellence)

Faculty of Engineering &
Technology

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

UNIVERSITY EXAMINATION FOR DEGREE IN BSCI. /BTECH. IN
INFORMATION TECHNOLOGY (BSC IT 9S/BT IT M11)

ICS 2403/EIT 4312: DISTRIBUTED SYSTEMS

END OF SEMESTER EXAMINATION
SERIES: AUGUST 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 ALL questions in section A and any other TWO from section B
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) Define the term distributed systems (2 marks)

b) Explain FOUR characteristics of a distributed system. (4 marks)

c) Give THREE common examples of distributed systems. (3 marks)

d) List FIVE applications of distributed systems (5 marks)

e) Identify FIVE design goals of a distributed system. (5 marks)

f) Describe FIVE design challenges of a distributed system (5 marks)

g) List FOUR characteristics of a heterogeneous system. (4 marks)

h) Identify FOUR elements of a distributed system architecture. (4 marks)
i) List FOUR characteristics of a distributed system architecture. (4 marks)

SECTION B (Answer Any Two Questions)
Question Two (20 marks)

a) Define the term process synchronization. (2 marks)
b) Describe FIVE general approaches to process synchronization. (5 marks)
c) Differentiate between centralized mutual exclusion and distributed mutual exclusion. (8 marks)
d) Explain how a bully logarithm works. (5 marks)

Question Three (20 marks)

a) Describe the function of an election algorithm (2 marks)
b) When is an election algorithm created? (2 marks)
c) Describe with diagrams how the ring algorithm works. (16 marks)

Question Four (20 marks)

a) List FOUR properties of a transaction. (4 marks)
b) Describe FIVE activities of a distributed transaction. (5 marks)
c) List THREE types of group communications. (3 marks)
d) Identify FOUR group management functions. (4 marks)
e) Describe FOUR message ordering techniques. (4 marks)

Question Five (20 marks)

a) Differentiate between normal procedure call and remote procedure call. (3 marks)
b) Identify the components of a call message. (4 marks)
c) List any FIVE elements of an RPC system. (5 marks)
d) Describe the steps in conducting a remote procedure call. (8 marks)