TECHNICAL UNIVERSITY OF MOMBASA

Faculty of Engineering & Technology

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

DIPLOMA IN INFORMATION COMMUNICATION TECHNOLOGY
(DICT/ M 10/S-EV)

EIT 2309: DISTRIBUTED SYSTEMS

SPECIAL/SUPPLEMENTARY EXAMINATION
SERIES: FEBRUARY 2013
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 (COMPULSORY)** and any other **TWO** questions

Maximum marks for each part of a question are as shown
This paper consists of **TWO** printed pages

Question One (Compulsory)

a) Define a distributed system. **(2 marks)**
b) What are the elements of a distributed system? **(5 marks)**
c) Give examples of distributed systems. **(5 marks)**
d) What are the benefits of distributed systems? **(5 marks)**
e) Explain caching in distributed systems. **(4 marks)**
f) Using a well labeled diagram describe a client-server model of distributed systems. **(5 marks)**
g) What problems do designers face in distributed systems? **(4 marks)**

Question Two

a) Explain any **FIVE** types of transparency that exists in distributed systems. **(5 marks)**
b) Explain deadlock as relates to distributed systems. **(2 marks)**
c) Describe the **FOUR** conditions that must hold for a deadlock to occur. **(4 marks)**
d) How can you prevent and avoid a deadlock from occurring? **(4 marks)**

Question Three

a) What are the characteristics of a distributed system? **(8 marks)**

b) List distributed systems design challenges/concerns. **(5 marks)**

c) How different is a distributed system from the network configurations. **(2 marks)**

Question Four

a) What are the principles of distributed systems? **(3 marks)**

b) Highlight the disadvantages of distributed systems. **(3 marks)**

c) For a distributed system to be reliable it should have which characteristics? **(5 marks)**

d) Differentiate between cache hit and cache miss. **(4 marks)**

Question Five

a) Define:
   (i) Inter Process Communication (IPC)
   (ii) Remote Procedure Calls (RPC)
   (iii) Distributed Shared Memory
   (iv) Distributed File Systems
   (v) Clock Synchronization **(10 marks)**

b) With examples, discuss any **FIVE** failures that are experienced in distributed systems**.(5 marks)**