TECHNICAL UNIVERISTY OF MOMBASA

Faculty of Engineering & Technology

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

UNIVERSITY EXAMINATION FOR DEGREE IN:
BACHELOR OF TECHNOLOGY IN INFORMATION TECHNOLOGY
(BTIT 13M – Y3 S2)

EIT 4310 EIT 4312: DISTRIBUTED SYSTEMS

END OF SEMESTER EXAMINATION
SERIES: DECEMBER 2014
TIME: 2 HOURS

Instructions to Candidates:
You should have the following for this examination
- *Answer Booklet*

This paper consists of **FIVE** questions. Attempt question **ONE (Compulsory)** and any other **TWO** questions
Maximum marks for each part of a question are as shown
This paper consists of **THREE** printed pages

Question One (Compulsory)

a) List any TWO distribute operating system **(2 marks)**

b) Distributed computer systems are critical for the functioning of many organization, explain any FOUR application of distributed systems. **(4 marks)**

c) Differentiate the following terms:
- **(i)** Synchronous vs Asynchronous **(2 marks)**
- **(ii)** Homogenous vs Heterogeneous systems **(2 marks)**
- **(iii)** Fragmentation vs Replication **(2 marks)**

d) Explain any TWO types of failures found in a distributed system with their solutions **(4 marks)**

e) Explain the advantages of using Distributed systems over centralized systems **(8 marks)**

f) With the aid of a diagram, explain the architectural design of a distributed system **(6 marks)**

Question Two

a) Read the following information of a logic time graph.

Figure 1

Answer the following questions:

(i) From the above diagram, explain the message sequence charts. **(4 marks)**

(ii) What do the arrows symbolize? **(2 marks)**

(iii) From the above diagram, what happens when sender 1 is abstracted **(3 marks)**

b) Write a load balancing algorithm by using C++ programming language **(10 marks)**

c) Explain the major role of distributed systems in a company

Question Three

a) Explain why homogenous systems are mostly preferred compared to heterogeneous systems in a distributed system environment **(8 marks)**

b) The government of Kenya is now in the transformation state to the fully use of digital systems, explain any FIVE areas advisable where distributed systems can be applied. **(10 marks)**

c) Explain any TWO designing issues of a distributed system **(2 marks)**

Question Four

a) Apart from cryptography, explain different ways on how you can secure distributed systems. **(6 marks)**

b) When a processes has been interrupted, A remote procedure call is initiated. Explain the steps of RPC **(6 marks)**

c) List any FOUR programming languages specifically tailored for distributed programming systems. **(4 marks)**

d) Explain TWO benefits of a client server network in a distributed system **(4 marks)**

Question Five

a) Explain FIVE advantages of using distributed database over centralized database system **(10 marks)**

b) Explain in details the following strategies in a distributed database

(i) Fragmentation **(5 marks)**

(ii) Replication **(5 marks)**