TECHNICAL UNIVERISTY OF MOMBASA

Faculty of Engineering & Technology

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

UNIVERSITY EXAMINATION FOR DEGREE IN:
BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY
(BSIT 12J – Y3 S1)

ICS 2400: TRANSACTION PROCESSIGN SYSTEMS

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

<u>**Instructions to Candidates:**</u>
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 **TWO** printed pages

Question One (Compulsory)

a) Describe the following terms:
  (i) System log
  (ii) Data recovery
  (iii) Transaction processing
  (iv) Business processing
  (v) Embedded structured query language
  (vi) Concurrency   **(12 marks)**

b) (i) Explain the term "Transaction"   **(2 marks)**
     (ii) Explain the FOUR properties of a transaction   **(8 marks)**

c) Explain the difference between the following terms:
  (i) "Binary Search" and "Linear Search"
  (ii) "Real Time Processing Systems" and Batch Processing System"   **(8 marks)**

Question Two

a) Jean decides to send some money to his friend using M-pesa services. Describe any FIVE sources of transaction execution failure **(10 marks)**

b) Magdalene went to an ATM machine to withdraw some money. Describe the FIVE components that are required in the execution of the application in line with transaction processing system architecture. **(10 marks)**

Question Three

a) Briefly describe the basic steps in query processing **(4 marks)**

b) Explain the THREE components of query processing **(6 marks)**

c) Onyango wanted to reserve a seat in Modern Coast Bus Company. Before he could pay for the seat, he was informed the bus was full although the system showed seat No. 42 was vacant. Discuss the following types of problems in context of this statement:
    (i) Lost Update
    (ii) Temporary Update
    (iii) Incorrect Summary **(9 marks)**

d) Explain the term "Recovery" as used in database systems **(1 mark)**

Question Four

a) For recovery purposes, the system needs to keep track of the states and operations of the transactions.
    (i) Describe any FIVE operations that the recovery manager must keep track of **(10 marks)**
    (ii) Describe the following database recovery techniques:
        i. Salvation Program
        ii. Incremental Dumping
        iii. Audit Trail **(6 marks)**

b) Explain the following statements as used in execution of a transaction:
    (i) READ-ITEMX
    (ii) WRITE-ITEMX
    (iii) COMMIT
    (iv) Rollback **(4 marks)**

Question Five

a) Describe any THREE approaches in database programming to assist in database interactions in application programs **(10 marks)**

b) Explain any FOUR requirements for computer based transaction processing **(4 marks)**

c) Explain the possible sequence of state through which a transaction may go through **(6 marks)**