



TECHNICAL UNIVERSITY OF MOMBASA
INSTITUTE OF COMPUTING AND INFORMATICS

Select department

UNIVERSITY EXAMINATION FOR:
BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY

ICS 2400 : Transaction Processing System

END OF SEMESTER EXAMINATION

SERIES: APRIL 2016

TIME: 2 HOURS

DATE: 1 May 2016

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of **FIVE** questions. Attempt question ONE (Compulsory) and any other **TWO** questions.

Do not write on the question paper.

Question ONE

a) Describe the following types of problems encountered when two transactions are executed concurrently:

i) Lost update problem

ii) Dirty read Problem

iii) Incorrect summary problem

[6 Marks]

b) Explain the difference between the following terms:

i) "Online Transaction Processing System" and "Transaction Processing Systems"

ii) "Commit_Transaction" and "Rollback"

iii) "Single User System" and "Multiuser System"

[12 Marks]

c) Explain the four properties of a transaction.

[8 Marks]

d) State any four types of failures that may occur in transaction processing systems [4 Marks]

Question TWO

a) Explain why concurrency control is need in a transaction processing systems [4 Marks]

b) Explain the following terms:

i) Host language

ii) Concurrency

iii) Read-only transaction

[6 Marks]

c) Using ATM transactions, explain the following transaction states:

i) BEGIN_TRANSACTION

ii) READ_ITEM(X)

iii) END_TRANSACTION

iv) WRITE_ITEM(X)

[8 Marks]

d) State any four requirements for a business transaction

[4 Marks]

Question THREE

a) Explain why recovery is needed in a transaction processing systems [4 Marks]

b) Explain the term “System Log”. [2 Marks]

c) Using a well diagram, describe transaction processing system architecture [10 Marks]

d) Explain the “NO_UNDO/REDO” recovery algorithm [4 Marks]

Question FOUR

a) Explain the following types of schedules based serialisability

i) Serial

ii) Non-serial

[4 Marks]

b) Outline the typical recovery procedures.

[4 Marks]

c) For the following transaction processing applications, identify an example of transaction:

i) Banking

ii) Securities trading

iii) Insurance

iv) Inventory control

[8 Marks]

Question FIVE

a) Explain the term “Query Processing”

[2Marks]

b) With an aid of a diagram explain the major components of the query processing.

[8 Marks]

c) Explain the following concurrency control protocols:

i) Locking protocols

ii) Timestamp protocols

[6 Marks]

d) Explain the following types of locks:

i) Binary lock

ii) Shared lock

[4 Marks]