



TECHNICAL UNIVERSITY OF MOMBASA

INSTITUTE OF COMPUTING AND INFORMATICS
DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

UNIVERSITY EXAMINATION FOR:

BSIT BTIT 14S

ICS 2404 / EIT 4405: ADVANCED DATABASE SYSTEMS

SPECIAL/SUPPLEMENTARY EXAMINATION

SERIES: SEPTEMBER 2017

TIME: 2HOURS

DATE: Sep 2018

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

- i. Define the following terms:
 - a. Transaction (2 Marks)
 - b. Database warehouse (2 Marks)
 - c. Transaction server (2 Marks)
 - d. Nested transaction (2 Marks)
 - e. Schedule in database management system (2 Marks)
- ii. Highlight THREE drawbacks of managing a manual file system. (6 Marks)
- iii. Discuss FIVE merits of a database management system (10 Marks)
- iv. How can a database maintain privacy and be secure? (4 Marks)

Question TWO

- i. What is the necessity of schedules in a database? (4 Marks)
- ii. What is the purpose of having protected and monitored transactions in a database? (4 Marks)
- iii. There are three types of equivalence in relation to transactions namely; Result, view and Conflict Equivalence. Differentiate amongst the three equivalents. (6 Marks)
- iv. Discuss the benefits of transaction processing. (6 Marks)

Question THREE

- i. What is transaction compensation? (4 Marks)
- ii. Describe FOUR noted demerits of a database management system (8 Marks)
- iii. One hindrance to normal transaction processing as agents increase is deadlocking.
 - a. Explain a scenario on how it occurs and its impact to business transactions. (4 Marks)
 - b. Discuss TWO appropriate solutions that can be used to solve the above named problem. (4 Marks)

Question FOUR

- i. Describe the properties of transactions showing clearly the uniqueness of each of them. (8 Marks)
- ii. Discuss THREE pros and THREE cons of semi-structured data format. (6 Marks)
- iii. How do sagas differ from nested transactions? (3 Marks)
- iv. Define semi-structured data (3 Marks)

Question FIVE

- i. Differentiate between the following:
 - a. Heterogeneous and homogenous transaction processing systems. (4 Marks)
 - b. Distributed database and distributed processing. (4 Marks)
 - c. OLAP and OLTP (2 Marks)
- ii. Discuss any TWO types of semi-structured data (4 Marks)
- iii. Using an example illustrate an XML declaration statement. (3 Marks)
- iv. How can XML nest elements in a document? (3 Marks)