



TECHNICAL UNIVERISTRY OF MOMBASA

Faculty of Engineering & Technology

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

UNIVERSITY EXAMINATION FOR DEGREE IN:
BACHELOR OF TECHNOLOGY IN INFORMATION TECHNOLOGY
(BTIT M12/J-FT – Y4 S2)

EIT 4415: INTRODUCTION TO DATA WAREHOUSING

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 **TWO** printed pages

Question One (Compulsory)

- a) The main features of data mining operations, including predictive modeling database segmentation, link analysis, and deviation detection. Explain these data mining operations. **(12 marks)**
- b) List **FOUR** main application areas of data mining **(4 marks)**
- c) State at least **TWO** mining results in each of the application area listed in (b) above **(8 marks)**

- d) Data mining tools sometimes offer a choice of operations to implement a technique. Outline THREE of the criteria for selection of these tools. (6 marks)

Question Two

- a) Define the term transaction (3 marks)
- b) Describe the transaction sequence with appropriate state transition diagram of a transaction (6 marks)
- c) Describe the FOUR basic properties of a transaction (11 marks)

Question Three

- a) In a networked environment with series of clients and users in a database management system, explain THREE reasons why it is necessary to implement transaction control in both database management system and data warehouse (6 marks)
- b) Write brief notes in the following concurrency control features: (14 marks)
- (i) Serializability
 - (ii) Deadlock and how it can be resolved
 - (iii) Time stamping
 - (iv) Optimistic concurrency control
 - (v) Granularity of locking

Question Four

- a) As a database administrator, you are always of concern to availability, integrity and consistency of data items in the database. Outline FIVE various types of database failures. (5 marks)
- b) In the event of database failures, outline THREE main recovery techniques you will employ to ensure continuity of the business system. (12 marks)
- c) Describe what a fact table is in the context of snowflakes schema and describe how it is generated (3 marks)

Question Five

Incorrect Locking Schedule refers to a problem that transactions release locks too soon, resulting in loss of total isolation and atomicity. To guarantee serializability, there is need for an additional protocol concerning the positioning of lock and unlock operations in every transaction:

- a) Explain the concept of two-phase locking (2PL) (10 marks)
- b) State the meaning of the following terms: (10 marks)
- (i) Data mart
 - (ii) Grain
 - (iii) Data Warehouse
 - (iv) Link analysis
 - (v) OLTP