(University of Choice)

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)

MAIN CAMPUS

UNIVERSITY EXAMINATIONS
2022/2023 ACADEMIC YEAR

FORTH YEAR FIRST SEMESTER REGULAR EXAMINATIONS

FOR THE DEGREE
OF
BACHELOR OF SCIENCE IN MATHEMATICS

COURSE CODE: BIT 415

COURSE TITLE: DATA WAREHOUSING AND MINING

DATE: 15/12/2022   **TIME:** 8:00A.M-10:00A.M

INSTRUCTIONS TO CANDIDATES

Answer Question ONE and choose any other Two.

TIME: 2 Hours

MMUST observes ZERO tolerance to examination cheating

This Paper Consists of 2 Printed Pages. Please Turn Over.

QUESTION ONE [COMPULSORY] [30 MARKS]

a. Explain the differences between Online Transaction Processing (OLTP) and Online Analytical Processing (OLAP) [4marks]

b. Explain how metadata is critical for data warehouse development and administration. [2marks]

c. What are dimension hierarchies? Give three examples. [4marks]

d. Differentiate between slowly and rapidly changing dimensions. [4marks]

e. Explain the sparse nature of the data in the fact table. [4marks]

f. Discuss the benefits of Data Warehouses. [6marks]

g. A data warehouse is subject-oriented. What would be the major critical business subjects for the following companies? [6marks]
   i. an international manufacturing company
   ii. a local community bank
   iii. a domestic hotel chain

QUESTION TWO [20 MARKS]

a. Describe at least six characteristics or features of a data warehouse. [12 marks]

b. You are the data design specialist on the data warehouse project team for a manufacturing company. Design a STAR schema to track the production quantities. Production quantities are normally analyzed along the business dimensions of product, time, parts used, production facility, and production run. State your assumptions. [8marks]

QUESTION THREE [20 MARKS]

a. A Data Warehouse is Blend of Many Technologies. Discuss [4marks]

b. A data warehouse is subject-oriented. What would be the major critical business subjects for the following companies? [6marks]
   i. an international manufacturing company
   ii. a local community bank
   iii. a domestic hotel chain

c. Why is the entity-relationship modelling technique not suitable for the data warehouse? How is dimensional modelling different? [4marks]

d. You cannot treat rapidly changing dimensions in the same way as Type 2 slowly changing dimensions. Discuss. [6marks]

QUESTION FOUR [20 MARKS]

a. You are the data analyst on the project team building a data warehouse for an insurance company. List the possible data sources from which you will bring the data into your data warehouse. State your assumptions. [5marks]

b. A dimension table is wide; the fact table is deep. Explain. [5marks]

c. Why is data integration required in a data warehouse, more so there than in an operational application? [2marks]

d. In which situations can JAD methodology be successful for collecting requirements? [2marks]

e. Using valid examples, describe snapshot and transaction fact tables. Explain how they are related. [6marks]

QUESTION FIVE [20 MARKS]

a. As the project manager for the development of the data warehouse for a domestic soft drinks manufacturer, your assignment is to write a proposal for providing metadata. Consider the options and come up with what you think is needed and how you plan to implement a metadata strategy. [10marks]

b. What is meant by conforming the dimensions? Why is this important in a data warehouse? [4marks]

c. List six processes in which metadata is significant for IT and explain why. [6marks]