



Uganda Martyrs University

Making a difference

UNIVERSITY EXAMINATIONS

FACULTY OF SCIENCE

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION SYSTEMS

END OF SEMESTER FINAL ASSESMENT

SEMESTER II, 2023/2024

COURSE	:	MASTER OF INFORMATION SYSTEMS
CLASS/YEAR	:	ONE
EXAM	:	BUSINESS INTELLIGENCE AND DATA MINING
CODE	:	MIS 6202
SEMESTER	:	TWO
DATE	:	SATURDAY 1 st JUNE 2024
TIME	:	9:00-11:30 AM
DURATION	:	2 HOURS 30 MINUTES

Instructions

1. This examination carries 80 marks; the remaining 20 marks will be awarded for the draft paper you wrote.
 2. Attempt **ANY four** questions
 3. Time Allowed is **2 Hours and 30 minutes** Only.
 4. All University examination rules apply.
 5. Write well and space your work widely.
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Question Four

The terms Drill Down and Roll Up are common in Business Intelligence (BI) and Data Mining (DM) terminologies.

- a) Clearly explain the two terms (Drill Down and Roll Up) with a concrete example of data in a hypothetical supermarket. Be brief and clear.
- b) A pivot table is an important tool in data presentation and analysis. Illustrate using dummy data of your choice how a pivot table can be used to represent data relevant to the top management of Centenary Bank.

Question Five

Classification is one of the common methods of Data Mining (DM). This method is popular today where models are trained to classify different items. One of the methods used to estimate the accuracy of a given model is the confusion matrix. Assume you have been identified to explain the confusion matrix to young undergraduate students of year one in the Faculty of Science. Assume that a model has been trained to classify perishable products of a given supermarket as rotten or fresh.

- a) Clearly explain what the scenario would be in (i) True Positive Count, (ii) False Positive Count, (iii) False Negative Count and (iv) True Negative Count.
- b) Clearly, but briefly, distinguish between classification and clustering as methods of Data Mining.

Question Six

In the context of a Bank like Centenary Bank, dashboards and balanced score cards can be very significant for managers and people who are not in management.

- a) State and briefly explain any THREE key differences and similarities between dashboards and balanced score cards.
- b) Using a well labelled diagram only, draw a very simplified snapshot of (i) a Dashboard and (ii) a Balanced Score Card that one can find in Centenary Bank.

END

Question One

Web mining involves three main components: Web Structure Mining, Web Content Mining and Web Usage Mining.

- a) Taking the context of an online shopping system called **Kikuubo Online**, explain the three components of web mining.
- b) Assume there is a new Motel called Neat Motel that has online presence. Advise the manager of Neat Motel on how to use the three components to increase the customer base of Neat Motel.

Question Two

In developing a Data Warehouse, fact tables and dimensional tables are crucial. Some people confuse the two concepts because they argue that both fact tables and dimensional tables are all tables.

- a) Taking the context of Neat Motel, if you were told to design a Data Warehouse for such a Motel, draw one fact table and two corresponding dimensional tables that are likely to be part of your design.
- b) Using the design in (a) above, clearly show an example of a report that would be generated by a Data Warehouse implemented based on that design. This report should have measures.

Question Three

In Business Intelligence (BI) and Data Mining (DM) the following terms are commonly used: Extract Transform and Load (ETL), Online Analytical Processing (OLAP) and Online Transactional Processing (OLTP). Taking the context of a Bank like Centenary Bank, answer the questions that follow:

- a) Clearly Distinguish between OLTP and OLAP in the context of Centenary Bank.
- b) In a Centenary Bank Context, what do you, briefly but clearly, suspect to be the key processes done in a typical ETL process?