MURANG'A UNIVERSITY OF TECHNOLOGY

SCHOOL OF COMPUTING AND INFORMATION TECHNOLOGY

DEPARTMENT OF INFORMATION TECHNOLOGY

UNIVERSITY ORDINARY EXAMINATION

2023/2024 ACADEMIC YEAR

THIRD YEAR **FIRST** SEMESTER EXAMINATION FOR BBIT, BIT, AND BSE

SIT 303-BUSINESS INTELLIGENCE

DURATION: 2 HOURS

INSTRUCTIONS TO CANDIDATES:

1. Answer question one and any other two questions.
2. Mobile phones are not allowed in the examination room.
3. You are not allowed to write on this examination question paper.

SECTION A (30 MARKS): Answer all questions in this section

QUESTION ONE (30 MARKS)

1. Define the following terms: (4 marks)
   a. Business intelligence
   b. Data analysis
   c. Data mining
   d. Sequence mining

2. Highlight four main pillars of business intelligence. (4 marks)

3. Data warehousing involves collecting data from different sources with different data structures then sorting if for posterity. Explain the most commonly used BI model for data integration. (6 marks)

4. Discuss three online analytical processing (OLAP) operations. (6 marks)

5. An online store has hired you to advise them on how to enhance the reporting capacities of their BI systems advise them on types of visualization they can use and when to use each type of visualization. (4 marks)

6. Elucidate the three tiers of the data warehousing architecture. (6 marks)

SECTION B (40 MARKS): Answer any two questions in this section

QUESTION TWO (20 MARKS)

You have been hired by Murang'a county government as a business intelligence consultant to help in developing B.I systems for the entire county. The BI system is expected to analyse historical data and be useful even in the future therefore it must be scalable enough taking this in to consideration answer the following questions

a. Explain how you would apply cross industry standard process for data mining (CRISP-DM) in this case. (12 marks)

b. Discuss four trending techniques that you would use to make sure that your BI systems is scalable and useful in the futures. (8 marks)

QUESTION THREE (20 MARKS)

Imagine you work for a real estate company that specialize in commercial properties. The company want to leverage geographical information systems (GIS) technology to enhance its business intelligence (BI) capabilities

a. Describe how GIS and spatial data analysis can contribute to data driven decision making in the real estate industry. (8 marks)

b. Discuss potential challenges and consideration when implementing GIS and BI in real estate. (4 marks)

c. Social media is very common among the middle age population today considering this category of people are the most ideal customers for real estate companies since they have cash flow access to credit and are looking for settling and investment opportunities in real estate. Explain how real estate companies can use social media analysis to understand potential customers. (8 marks)

QUESTION FOUR (20 MARKS)

a. Taking Safaricom PLC as a case study, you are required to apply time series data mining in to the company's data. Explain three main components you would extract through time series data decomposition. Use relevant examples. (6 marks)

b. Differentiate between support and confidence as used in association rule mining. (4 marks)

c. Discuss ways in which association rule mining can be useful to retailers like Naivas supermarket. (10 marks)