# MURANG'A UNIVERSITY OF TECHNOLOGY

## SCHOOL OF COMPUTING, INFORMATION AND TECHNOLOGY

## DEPARTMENT OF INFORMATION TECHNOLOGY

UNIVERSITY ORDINARY EXAMINATION

2024/2025 ACADEMIC YEAR

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

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 – ANSWER ALL QUESTIONS IN THIS SECTION**

**QUESTION ONE (30 MARKS)**

a)  Highlight the five characteristics of big data. (5 marks)

b)  Explain three key differences between decision support systems (dss) and business intelligence system (BI). (6 marks)

c)  Elucidate three differences between a transactional database and a data warehouse. (6 marks)

d)  Highlight three ways in which retailers like Quickmart supermarket can use association rule mining. (3 marks)

e)  Explain two ways in which web structure mining can be beneficial. (4 marks)

f)  Taking KPLC a case study, you are required to apply time series data mining into the company's data. Giving examples explain three main components that you would extract through time series data decomposition. (6 marks)

**SECTION B – ANSWER ANY TWO QUESTIONS IN THIS SECTION**

**QUESTION TWO (20 MARKS)**

Safaricom PLC, a large telecommunication company, is experiencing high customer churn rates. The company has a large database of customer records including demographic details, service usage, billing information and customer complaints. The management wants to identify key factors contributing to customer churn.

a)  Discuss how you can apply SEMMA, methodology in this task. (10 marks)

b)  Describe five python libraries and frame works that are used in data analysis. (10 marks)

**QUESTION THREE (20 MARKS)**

a)  Describe five types of geographical information systems (GIS) data analysis that an organization such as national environment management authority (NEMA) can use. (10 marks)

b)  Using the central bank of Kenya (CBK) as an example describe four type of data analysis that CBK can implement an explain how each type can benefit the organization. (8 marks)

c)  Differentiate between data science and data analytics. (2 marks)

**QUESTION FOUR (20 MARKS)**

a)  As a business intelligence expert you have been hired by a company that is targeting the young generation for a new project. The company requires you to perform social network analysis. Explain three ways in which you can collect social media data from x.com platform. (6 marks)

b)  The most popular data model for a data ware house is multi-dimensional data model. Describe three ways in which multidimensional data model can exist in. (6 marks)

c)  Describe four types of online analytical processing (OLAP). (6 marks)