



MANICALAND STATE UNIVERSITY OF APPLIED SCIENCES

FACULTY OF ENGINEERING, APPLIED SCIENCES AND TECHNOLOGY

DEPARTMENT: COMPUTER SCIENCE AND INFORMATION SYSTEMS

BUSINESS INTELLIGENCE AND DATA ANALYTICS

CODE: INSY421

SESSIONAL EXAMINATIONS

OCTOBER 2023

DURATION: 3 HOURS

EXAMINER: Ms.G. MUTIPFORO

INSTRUCTIONS

1. Answer **all** questions in **Section A**
2. Answer **any three** questions in **Section B**

Total marks: 100

Section A, Compulsory

Answer all questions in this section

Question 1

A telecommunications company was losing market share to its competitors. The company wanted to use data analytics to understand why customers were switching to other providers and how to win them back. The company used a variety of data analytics tools to analyze its customer data. This data included information on customer demographics, purchase history, and call detail records. The company also used surveys and interviews to gather feedback from customers. The data analytics revealed that the company's customers were switching to other providers for a variety of reasons. Some customers were unhappy with the customer service, while others were frustrated with the high prices. The company also found that some customers were simply not aware of all the features and benefits of its products and services. The company took a number of steps to address the issues that were causing customers to leave. It improved its customer service, lowered its prices, and made its products and services more visible to customers. The company also launched a marketing campaign to educate customers about its products and services. As a result of these changes, the company was able to regain market share and improve its customer satisfaction scores.

- a) With reference to the case study above, define the term business intelligence. (2)
- b) What data analytics tools did the company use to analyze its customer data? (6)
- c) What steps did the company take to address the issues that were causing customers to leave? (4)
- d) What are the different types of data that the telecommunications company collected? (4)
- e) What are the benefits of using business intelligence and data analytics? (8)
- f) Highlight on some of the challenges of using business intelligence and data analytics. (8)
- g) How can data analytics be used to improve customer satisfaction in the telecommunications industry? (8)

Section B

Answer any three questions from this section

Question 2

- a) Data visualization is an important part of data exploration and decision making. Given the power of visualization, it is only natural to apply the rich communication techniques in the field of BI and analytics. Outline and explain any four (4) data visualization techniques that you are familiar with. [12]
- b) Describe web mining? List and explain any three methods of web mining. [8]

Question 3

- a) Discuss how the key components of business intelligence systems transform the following:
- i) Data to Information [3]
 - ii) Information to Knowledge [3]
 - iii) Knowledge to Decisions [3]
- b) Explain the following OLAP operations:
- i) Drill down [3]
 - ii) Slicing and dicing [4]
 - iii) Roll up [4]

Question 4

- a) Identify and explain any five (5) quality dimensions of data. [10]
- b) Using suitable examples, explain the various types of decisions according to their nature? [10]

Question 5

- a) Explain these terms as they are used in business intelligence
- i. Descriptive analytics
 - ii. Prescriptive analytics
 - iii. Predictive analytics [9]

iv. How can descriptive and predictive analytics help in pursuing prescriptive analytics? [5]

c) **Classification** and **regression** are predictive data mining functionalities that are used to build models that can be used to predict future outcomes or events. Explain these two functionalities and give their areas of application in business. [6]