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University Examinations 2024/2025

FIRST YEAR SECOND SEMESTER EXAMINATION FOR THE DEGREE MASTER OF
SCIENCE IN INFORMATION TECHNOLOGY

CIT 7153: BUSINESS INTELLIGENCE AND ANALYTICS

DATE: JANUARY 2025

TIME: 3 HOURS

INSTRUCTIONS: Answer question *one* and any other *three* questions

QUESTION ONE (20 MARKS)

- Explain how the evolution of decision support has influenced modern data analytics with relevant case studies to support your answer. [5 marks]
- Define and differentiate descriptive, predictive, and prescriptive analytics giving an example of how each is applied in a business context. [6 marks]
- Describe the role of data preprocessing in business analytics, highlighting why it is a critical step in the data mining process? [3 marks]
- Outline the key components of a data warehouse architecture, and how it supports business intelligence? [3 marks]
- Discuss one predictive analytics model used in web and social media analytics and provide a practical business case example. [3 marks]

QUESTION TWO (20 MARKS)

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Page 1

- a) Define each stage of the ETL process (Extract, Transform, Load) and its importance in data warehousing, [8 marks]
- b) Discuss the challenges that organizations may encounter during the ETL process. [6 marks]
- c) Provide a case study example of a business that successfully implemented an ETL process and the benefits it derived. [6 marks]

QUESTION THREE (20 MARKS)

- a) Define Natural Language Processing (NLP) and its role in analyzing unstructured text data. [5 marks]
- b) Explain how sentiment analysis is conducted using NLP techniques in business. [5 marks]
- c) Discuss a case study where sentiment analysis through NLP was successfully applied in a business context. [5 marks]
- d) Highlight the challenges businesses may face when implementing NLP and sentiment analysis. [5 marks]

QUESTION FOUR (20 MARKS)

- a) Define regression modeling and its importance in descriptive analytics. [6 marks]
- b) Describe how the Dallas Cowboys used regression modeling and data visualization to make data driven decisions. [6 marks]
- c) Explain how SiriusXM used data visualization to enhance marketing strategies. [5 marks]
- d) Discuss the role of visual dashboards in supporting these decisions. [3 marks]

QUESTION FIVE (20 MARKS)

- a) Define optimization and simulation techniques in the context of prescriptive analytics. [5 marks]
- b) Compare the key differences between optimization and simulation. [5 marks]
- c) Discuss a business case where optimization was used to enhance decision-making (5 marks)

d) Provide an example of a company that used simulation techniques to solve a business problem.

[5 marks]