ST. PAUL'S UNIVERSITY

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FACULTY OF BUSINESS, COMPUTER SCIENCE AND COMMUNICATION STUDIES
MAY-AUGUST 2021/2022 SEMESTER
CSC 4207: BUSINESS INTELLIGENCE

DATE: AUGUST, 2022   **TIME: 2 Hours**

INSTRUCTIONS: SECTION A IS COMPULSORY. ANSWER ANY OTHER TWO QUESTIONS IN SECTION B.

SECTION A-COMPULSORY

QUESTION ONE [30 MARKS]

a) Discuss any **FOUR** applications of business intelligence.   **(4 Marks)**

b) Using illustrations/ diagrams, demonstrate any **THREE** mechanisms that can be used to visualize the output of a business intelligence undertaking   **(6 Marks)**

c) Distinguish between supervised and unsupervised learning   **(4 Marks)**

d) Using an illustration, describe the term overfitting when creating models to generate business intelligence   **(3 Marks)**

e) Briefly explain the drivers of business intelligence   **(4 Marks)**

f) Describe the term Data Mart, demonstrating its relevance in business intelligence   **(4 Marks)**

g) Discuss the **FIVE** characteristics of Big data   **(5 Marks)**

SECTION B- ANSWER ANY TWO QUESTIONS FROM THIS SECTION

QUESTION TWO [20 MARKS]

a) Data Warehouses are a critical component of business intelligence. Using illustrations, discuss the **FOUR** characteristics of a data warehouse   **(8 Marks)**

b) Using an appropriate diagram, provide a data warehouse architecture   **(6 Marks)**

c) Discuss any **THREE** challenges one can encounter when loading data into a data warehouse   **(6 Marks)**

QUESTION THREE [20 MARKS]

Business intelligence allows for insights to be derived that facilitates decision making. St Pauls's University wants to implement a business intelligence solution.

a) Business intelligence applications help managers in decision making. Describe any **FOUR** mechanisms that managers use to undertake decision making in the absence of business intelligence. **(4 Marks)**

b) With examples at St Pauls's University discuss **THREE** types of decisions that can be undertaken with the application of business intelligence **(6 Marks)**

c) With illustrations, discuss any **THREE** benefits St Pauls's University will gain with the use of business intelligence **(6 Marks)**

d) Outline any **FOUR** challenges St Pauls's University may encounter in the endeavor to implement a business intelligence solution. **(4 Marks)**

QUESTION FOUR [20 MARKS]

Locusts have invaded most parts of the country and the government needs to seek and employ interventions to tackle this challenge as it is a threat to our food security

a) Data has been gathered on locusts behavior across different parts of the country. Discuss any **FIVE** data quality issues that may be encountered. **(5 Marks)**

b) Using illustrations, discuss how the following types of analytics would be used in this scenario **(3 Marks Each)**

   i. Descriptive analytics
   ii. Predictive analytics
   iii. Prescriptive analytics

c) Discuss any **THREE** benefits of using analytics in the locust invasion scenario **(6 Marks)**

QUESTION FIVE [20 MARKS]

You are provided with the following results dataset

Student ID	Phone number	Language	Passed all assignments	GPA	Passed exam
1	254 - 3452	Java	No	3.1	Yes
2	254 - 6294	Java	No		
3	254 - 9385	C++	Yes	3.5	Yes
4	254 - 9387	Python	Yes	2.5	Yes
5	254 - 9284	Java	Yes	3.9	No
6	254 - 0293	C++	No	2.9	No
ABC	254 - 9237	Java	No	0.4	No
8	254 - 3737	Python	Yes	3.2	Yes

a) Using illustrations, identify the types of data in the given table **(4 Marks)**

b) Prior to undertaking any data mining task on the dataset set, it is required that you undertake a data cleaning exercise. Observe the given dataset and using illustrations, determine the data cleaning approaches you would apply. **(6 Marks)**

c) Using the above data set, use a suitable classification algorithm to explain if a student will pass or fail the exam. **(5 Marks)**

d) Using illustrations, determine the challenges you may face while undertaking the data mining task **(5 marks)**