INSTITUTE OF TECHNOLOGY UNIVERSITY OF MORATUWA
NATIONAL DIPLOMA IN TECHNOLOGY
SEMESTER IV FINAL EXAMINATION 2021
CONDUCTED IN SEPTEMBER 2023

IT2401 BUSINESS INTELLIGENCE AND ANALYTICS

Time Allowed: Two hours

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Instructions to Candidates:
- Answer **ALL** questions.
- This question paper has **FIVE** questions on **TWO** pages.
- This paper carries only 70% of the total module marks.
- Maximum marks allocated for each section of questions are shown.
- Drawings and sketches should be clear, neat, and in approximate proportion.
- Do not use Red ink.
- Start your answers to each question on a new page.

Data and Information:

NIL

1 a) Write three (3) factors why organizations use Business Intelligence for their success. (3 marks)

   b) Identify whether the given statements in the context of Business Intelligence represent data, information, or knowledge. (3 marks)
       i)   The company is making profit.
       ii) Year :   Sales :   Expenses
            2016 :   1.0 M :   0.7 M
       iii) Sales are growing above 1.0 M

   c) Discuss three (3) trends in Business Intelligence. (6 marks)

   d) CRISP-DM (Cross Industry Standard Process for Data Mining), consists of the following stages: (6 marks)

       Business understanding
       Data understanding
       Data preparation
       Data modelling
       Evaluation
       Deployment

       Briefly describe any three (3) stages.

2 a) Define OLTP (On-Line Transaction Processing) system. (3 marks)

   b) Identify facts and dimensions from the given schema: (2 marks)
       Sales_amount = f (Production, Location, Time)

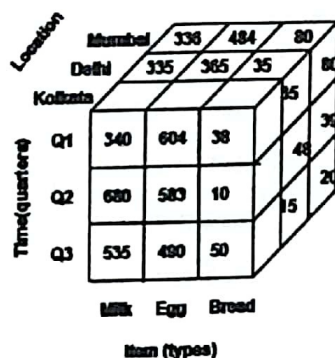   c) Identify the dimensions given in the data cube. (3 marks)

Figure Q2

   d) Briefly describe any two (2) of the different schemas found in Multi-Dimensional databases. (4 marks)

3   a)   State three (3) reasons for data pre-processing.   (3 marks)

     b)   Copy Table Q3 into your answer script and by providing techniques used   (6 marks)
for data normalization and data transformation complete the table.

Techniques used for data normalization	Techniques used for data transformation
1.	1.
2.	2.
3.	3.

Table Q3

     c)   Given below are some erroneous data extracted from a dataset. Identify   (6 marks)
the type of error correctly.
    i)   Age="-20 years"
    ii)   Occupation=""
    iii) Date 1 =2023.08.14
            Date 2 =08/14/2023

4   a)   Define "Data governance"   (2 marks)

     b)   Explain "Root Cause Analysis" and "What-If Analysis".   (4 marks)

     c)   Name four (4) different types of data analytics used in the data analysis   (4 marks)
model.

     d)   Identify the types of data mining analytics for the following scenarios.   (4 marks)
    i)   Which product has the most defects? ☺
    ii)   How we can eliminate these defects from our product? ☺
    iii) What could happen to our future sales due to this defect in product?
    iv) Why do that defects appear? ☺

5   a)   Define the term "big data".   (2 marks)

     b)   State three (3) ways that data reduction can be done.   (3 marks)

     c)   Explain two (2) types of reporting in Business Intelligence and provide   (6 marks)
examples for each type.