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should one perform in order to list the average grade of CS courses for each XYZ student.

(7)

7. (a) Differentiate between supervised and unsupervised learning. Explain with diagrams (8)
- (b) Briefly discuss the characteristics of a fact table. (7)

(100)

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 7571

Unique Paper Code : 61018513

Name of the Paper : Business Data Analysis (GEC-5.3)

Name of the Course : B.Voc. (CBCS), 2023

Semester : V

Duration : 3 Hours

Maximum Marks : 75

**Instructions for Candidates**

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt **any 5** questions. (15×5=75)

1. (a) What are the essential differences between the MOLAP and ROLAP models? Also list a few similarities. (5+3=8)

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- (b) Discuss metadata in detail? Why is it significant in data warehousing. (4 + 3 = 7)
2. (a) What is a data Warehouse? Give a detailed account of its characteristic features. (2+ 8 = 10)
- (b) What is dimensional modelling? Why is the OLTP modelling not suitable for data warehouse? (2.5+2.5=5)
3. (a) Differentiate between any two of the following: (5\*2=10)
- (1) Data warehouse and data mart
  - (2) Data warehouse and operational systems
  - (3) OLAP vs OLTP
- (b) Briefly explain the different STAR schema keys. (5)
4. (a) Write short notes on: (2.5\*4=10)
- (1) Factless fact table
  - (2) Market basket analysis
  - (3) Slice-and-dice

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- (4) Sparse nature of the data in fact table
- (b) Elaborate on the MBR technique used in data mining along with diagram. (5)
5. (a) What is Data Mining? List some applications of data mining in business. (2+5=7)
- (b) How does a snowflake schema differ from a STAR schema? State two advantages and two disadvantages of the snowflake schema. (4+ 4 =8)
6. (a) Draw and explain a snowflake diagram that represents the data warehouse of XYZ University, which includes four dimensions like student, course, semester, and instructor, along with the measures count and avg\_grade. When at the lowest conceptual level (e.g., for a given student, course, semester, and instructor combination), the avg\_grade measure stores the actual course grade of the student. At higher conceptual levels, avg\_grade stores the average grade for the given combination. (8)
- (b) Starting with the base cuboid [student, course, semester, instructor], what specific OLAP operations (e.g., roll-up from semester to year)