REG.NO.:

VIT
Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

SCHOOL OF COMPUTER SCIENCE AND ENGINEERING
CONTINUOUS ASSESSMENT TEST - II
FALL SEMESTER 2024-2025

SLOT: G1+TG1

Programme Name & Branch : M.Tech. (Integrated)
Course Code and Course Name : MDI3004 and Intelligent Database Systems
Faculty Name(s) : Dr. Deepika J, Dr. Thangaramya K
Class Number(s) : VL2024250102707, VL2024250102720
Date of Examination : 19-10-2024
Exam Duration : 90 minutes Maximum Marks: 50

General instruction(s):

- Answer All Questions
- CO4 – Illustrate the role of active and deductive databases as intelligent databases.
  CO5 – Integrate knowledge based systems and other emerging technologies in DBMS.

Q.No.	Question	M	CO
1.	i) A supermarket inventory management system tracks the stock levels of various products. Each product has a unique product ID, name, price, and quantity_in_stock. When a product is sold, its quantity in stock is reduced. The sales table has sale_id, product_id, quantity_sold and sale_date. Write triggers for the following cases. Before Insert on sales: (2 marks) 1. Check if the quantity sold exceeds the quantity in stock. If so, raise an error and prevent the sale. 2. Update the quantity_In_stock of the product to reflect the sale. After Insert on sales: (2 marks) 3. Log the sale event in an audit table. 4. If the quantity_in_stock of the product falls below a predefined threshold, send a notification to the inventory manager. Before Update on products: (1 mark) 5. Prevent updates to the product_id column. After Delete on products: (1 mark) 6. Log the deletion event in an audit table. ii) Identify and justify the level of granularities in the below tasks: (4 marks) • To analyze the sales performance of a particular product • To compare the sales of different product categories.	10	CO4
2.	Consider the scenario to identify customers at risk of churning and implement targeted retention strategies. Create a Starburst rule system implementation with rules, triggers and executions considering the following conditions: • If a customer has not made a purchase in the past 3 months, flag them as a potential churn risk. • If a customer's lifetime value is below a certain threshold, flag them as a potential churn risk. Assume the tables you would require to complete these	10	CO4

REG.NO.:

VIT
Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

SCHOOL OF COMPUTER SCIENCE AND ENGINEERING
CONTINUOUS ASSESSMENT TEST - II
FALL SEMESTER 2024-2025

SLOT: G1+TG1

	conditions.		
3.	Consider the simple family tree with relationships. Facts: parent(john, mary) parent(john, paul) parent(mary, anne) parent(paul, tom) male(john) male(paul) female(mary) female(anne) Rules: father(X, Y) :- parent(X, Y), male(X). mother(X, Y) :- parent(X, Y), female(X). grandparent(X, Z) :- parent(X, Y), parent(Y, Z). sibling(X, Y) :- parent(Z, X), parent(Z, Y), X \= Y. uncle(X, Z) :- male(X), sibling(X, Y), parent(Y, Z) Given the rules, write DATALOG queries for the following: (Each 2 marks) 1. Who are the parents of John? 2. Who are the children of Mary? 3. Who are the siblings of Anne? 4. Calculate the average number of children per family. 5. Find all ancestors of John.	10	CO4
4.	Analyze and recommend the suitability of a deductive database architecture for a large-scale online retail platform. Justify your answer by explaining the components of a deductive database and how they can contribute to the platform's success by considering the factors such as scalability, performance, integration, and data consistency.	10	CO4
5.	Imagine that a large electronics company operates a customer support system to handle inquiries and provide assistance to its customers. How can a knowledge-based system and a relational database be integrated to enhance the capabilities of a customer support system? Address all the key factors that enhances the capabilities of the system as a whole.	10	CO5

****