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RV COLLEGE OF ENGINEERING®

(An Autonomous Institution Affiliated to VTU)

IV Semester B. E. Examinations Oct/Nov-2023

Artificial Intelligence and Machine Learning

DATABASE MANAGEMENT SYSTEM

Time: 03 Hours ***Maximum Marks: 100***

Instructions to candidates:

1. Answer all questions from Part A. Part A questions should be answered in first three pages of the answer book only.
2. Answer FIVE full questions from Part B. In Part B question number 2 is compulsory. Answer any ONE full question from 3 and 4, 5 and 6, 7 and 8, 9 and 10.

In summary, entities represent objects or things, while relations describe how those entities are connected or associated with one another.

A multivalued attribute is an attribute that can have multiple values for a single entity. Example: In a Student entity, an attribute like Phone Numbers could be multivalued because a student might have more than one phone number.

Query Language (e.g., SQL is a query language used for data manipulation in relational databases.)

PART-A

1	1.1	Define entity and relation.	02
	1.2	A ____ is a language that enables users to access or manipulate data.	01
	1.3	Define the multivalued attribute with an example.	02
	1.4	Define naive and causal end users.	02
	1.5	What are the roles of database designer?	02
	1.6	What is the difference between DELETE and DROP commands?	02
	1.7	Explain collection and document in the context of MongoDB.	02
	1.8	What is sharding?	01
	1.9	List two features of Cassandra.	02
	1.10	Differentiate between DISTINCT and UNIQUE value in SQL.	02
	1.11	What is key value pair? What is the usage of this in NoSQL.	02

PART-B

2	a	List four significant differences between a file processing system and a DBMS.	06
	b	Describe the different types of languages used in DBMS with example.	10
3	a	List and discuss the data types supported by SQL with examples.	06
	b	Describe the importance of layered architecture and three schema architecture with a neat diagram.	10
		OR	
4	a	Discuss the constraints of relation model in DBMS.	08
	b	Applying the rules of ER diagram, write an ER diagram for the given Schema: Doctor (SSN, FirstName, Lastname, Speciality, Years of Experience, PhoneNum) Patient(SSN,Firstname, lastname, Address, DOB, PrimaryDoctor_SSN) Medicine(tradename,UnitPrice,GenericFlag) Prescription(Id,Date, Doctor_SSN,patient_SSN) Prescription_medicine(Prescription Id, Tradename, NumofUnits)	08

5	a	How do you test for empty relations and absence of duplicate tuples in SQL? Explain with an example.	08
	b	Consider the following table 1 and table 2: Table1 Reg No | Branch | Section 1 | CSE | A 2 | ECE | B 3 | CV | A 4 | IT | B 5 | IT | A Table 2 Name | Reg No Hari | 2 Banu | 4 Priya | 7 i. what will be the output table, if we perform right outer join. ii. What will be the output table, if we perform left outer join. iii. What will be the output table, if we perform full join.	08
		OR	
6	a	Explain COMMIT and ROLLBACK commands with examples in SQL.	06
	b	Discuss the aggregate functions with an example.	10
7	a	Answer the following questions using MongoDb queries for the following student collection details- Students(S_id,S_name,S_grade,S_hobbies,S_city) i. Create a collection by the name "Students" and store the studentname, grade and hobbies. ii. Find the documents from the students collection where the StudName has an "e" in any position. iii. Find those documents from the Students collection where the hobbies is set to either "Chess" or is set to "Skating". iv. Sort the documents from the Students collection in the descending order of Studname. v. Find documents from the students collections where the StudName begins with 'M'. vi. vi. Update the existing student name "XYZ" to "ABC" in the employee collection.	08
	b	Differentiate between SQL and NoSQL.	08
		OR	
8	a	Discuss the CAP theorem in NoSQL.	08
	b	Discuss the different types of NoSQL data models with an example.	08
9	a	Discuss how column oriented database are stored physically.	08
	b	With a neat diagram explain the write operation in Cassandra.	08
		OR	
10	a	Discuss the concept of column databases using as nested maps.	08
	b	Explain the CRUD operation in Cassandra with an example.	08