VR20 Reg. No: | | | | | | | | | | |

VELAGAPUDI RAMAKRISHNA

SIDDHARTHA ENGINEERING COLLEGE

(AUTONOMOUS)

II/IV B.Tech. DEGREE EXAMINATION, DECEMBER - 2023

Third Semester

AI&DS

20AI&DS3303 DATABASE SYSTEMS

Time: 3 hours ***Max. Marks: 70***

Part-A is compulsory

Answer One Question from each Unit of Part - B

Answer to any single question or its part shall be written at one place only

PART-A

10 x 1 = 10M

1.	a.	What are the functions of a database administrator?	**(CO1 K1)**
	b.	List set operations of relational algebra.	**(CO2 K1)**
	c.	List the types of attributes used in E-R Design.	**(CO1 K1)**
	d.	List any two types of outer join.	**(CO2 K1)**
	e.	What is a view?	**(CO2 K1)**
	f.	What is referential integrity?	**(CO2 K2)**
	g.	In what way BCNF is different from 3NF?	**(CO3 K2)**
	h.	Define normalization.	**(CO3 K1)**
	i.	Name two different locks of 2-phase locking protocol.	**(CO4 K1)**
	j.	Define full functional dependency.	**(CO4 K1)**

PART-B

4 x 15 = 60M

UNIT-I

2. a. Illustrate about three levels of Data abstraction. **(CO1 K2) 7M**

   b. Define DBMS. Explain the advantages of DBMS over traditional file system. **(CO1 K2) 8M**

(or)

3. a. Apply SQL concepts and write SQL expressions for the following queries?

   Sailors (sid, sname, rating, age)
   Boats (bid, bname, color)
   Reserves (sid, bid, day)

   i) Find the names of sailors who have reserved boat 104.
   ii) Find the sid of sailors who have reserved a red boat and green boat.
   iii) Find the colors of boats reserved by 'peter'.
   iv) Find the names of sailors who have reserved a red boat, but not green boat.
   v) Find the names of sailors who reserved at least one boat.
   (CO1 K3) 8M

   b. Discuss aggregate functions that are used in SQL with an illustration. **(CO1 K2) 7M**

UNIT-II

4. a. Draw the ER-diagram for a company database. **(CO2 K2) 8M**

   b. What are entity and relationship sets? List and explain the symbols used to draw ER Diagram. **(CO2 K2) 7M**

(or)

5. a. Describe various examples of queries in relational algebra. **(CO2 K3) 8M**

   b. Explain the select and project operations as used in relational algebra. **(CO2 K2) 7M**

UNIT-III

6. a. With suitable examples explain 2NF and 3NF. **(CO3 K2) 8M**

   b. Briefly explain about Closure of dependencies with an illustration. **(CO3 K2) 7M**

(or)

7. a. What do you mean by ACID properties of a transaction? Explain in detail. **(CO3 K2) 8M**

   b. Describe RW, WR and WW conflicts in concurrent execution of transactions. **(CO3 K2) 7M**

UNIT-IV

8. a. Explain the phases of ARIES algorithm. **(CO4 K2) 7M**

   b. Explain Parsing and Translation in query processing. **(CO4 K2) 8M**

(or)

9. a. Explain Two Phase- Locking protocol. What benefit does strict two-phase locking protocol provide? **(CO4 K2) 8M**

   b. Explain about shadow paging. **(CO4 K2) 7M**

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