Q. Code:732121

Reg. No. | | | | | | | | | | | | | |

B.E. / B. TECH.DEGREE EXAMINATIONS, MAY 2024

Third-Semester

CS22301 – DATABASE MANAGEMENT SYSTEMS

(Computer Science and Engineering)

(Regulation 2022)

TIME: 3 HOURS **MAX. MARKS: 100**

COURSE OUTCOMES	STATEMENT	RBT LEVEL
CO 1	Design database using Entity Relationship model and construct ER diagrams for enterprise databases	**2**
CO 2	Construct queries using Relational Algebra and SQL with advanced features	**4**
CO 3	Normalize the databases to reduce cost due to data redundancy	**3**
CO 4	Analyze the basic issues of transaction processing and maintain consistency of the databases.	**3**
CO 5	Compare and contrast various indexing strategies and apply the knowledge to tune the performance of the modern databases	**3**

PART- A (20x2=40Marks)

(Answer all Questions)

		CO	RBT LEVEL
1.	State the importance of Data Manipulation Language.	**1**	**2**
2.	Define physical, logical and view level data abstraction?	**1**	**2**
3.	Draw the symbols used in an entity relationship diagram for representing an entity set, weak entity set, attribute and multivalued attribute.	**1**	**2**
4.	For a binary relationship set R between entity sets A and B, list the mapping Cardinalities.	**1**	**2**
5.	State the use of Assignment operator in relational algebra with an example.	**2**	**3**
6.	List the importance of join operations in relational algebra.	**2**	**3**
7.	Justify how BCNF differ from third normal form.	**2**	**3**
8.	Write about dynamic SQL.	**2**	**2**
9.	State the importance of normalization process in RDBMS.	**3**	**2**
10.	Write the usage of creating triggers.	**3**	**2**
11.	Give an example of a relation schema R and a set of dependencies such that R is in BCNF, but not in 4NF.	**3**	**2**
12.	Why are certain functional dependencies called as trivial functional Dependencies?	**3**	**3**
13.	Outline about the ACID properties.	**4**	**2**
14.	Define Two phase commit protocol.	**4**	**2**

15.	What is the purpose of creating save points?		**4**	**2**
16.	List the recovery isolation levels in transaction management.		**4**	**2**
17.	Write about cloud databases.		**5**	**2**
18.	Write the importance of Ordered Indices.		**5**	**3**
19.	Differentitate between static hashing and dynamic hashing.		**5**	**2**
20.	List out the disadvantages of B Tree over B+ Tree?		**5**	**2**

PART- B (5x 10=50Marks)

		Marks	CO	RBT LEVEL
21. (a)	A Car rental company maintains a database for all vehicles in its current fleet. For all vehicles, it includes the vehicle identification number license number, manufacturer, model, date of purchase and color. Special data are included for certain types of vehicles. **Trucks:** Cargo capacity **Sports Cars:** horsepower, renter age requirement **Vans:** number of passengers Off-road vehicles, ground clearance, drive train (four-or two-wheel drive) **Draw an ER model for the car rental company database.**	**(10)**	**1**	**2**
	(OR)			
(b)	Discuss in detail about database system architecture with neat diagram.	**(10)**	**1**	**2**
22. (a)	Consider the following relations: EMPLOYEE (ENO, NAME, DATE_BORN, GENDER, DATE_JOINED, DESIGNATION, BASIC_PAY, DEPARTMENT_NUMBER) DEPARTMENT (DEPARTMENT NUMBER, NAME) **Write SQL queries to perform the following:** (i) List the details of employees belonging to department number 'CSE'. **(2)** (ii) List the employee number, employee name, department number and department name of all employees. **(4)** (iii) List the department number and number of employees in each	**(10)**	**2**	**4**

department. **(4)**

(OR)

(b)	Analyze and explain about fundamental and additional operations in relational algebra with example.	**(10)**	**2**	**4**
23. (a)	Explain the process of normalization from 1NF to BCNF stage with example.	**(10)**	**3**	**2**

(OR)

(b)	Explain the principles of Loss less join decomposition and Join dependencies with example.	**(10)**	**3**	**2**
24. (a)	Discuss in detail about the different locking mechanism used in lock based concurrency control.	**(10)**	**4**	**3**

(OR)

(b)	Explain in detail about the process of Deadlock prevention, Deadlock Detection and Deadlock avoidance.	**(10)**	**4**	**3**
25. (a)	Explain the different levels of RAI D and also discuss the factors need to be considered in choosing a RAI D level.	**(10)**	**5**	**3**

(OR)

(b)	Outline the factors used to evaluate indexing and hashing techniques. Also explain about dense index and sparse index with an example.	**(10)**	**5**	**3**

PART- C (1x 10=10Marks)

(Q.No.16 is compulsory)

		Marks	CO	RBT LEVEL
26.	Examine why timestamp-based concurrency control allows schedules that are not recoverable. Describe how it can be modified through buffering to disallow such schedules.	**(10)**	**4**	**5**

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