SE (COMP) - Sem IV / R-19 C-Scheme] SH-23   14/12/23

QP code: 42559

Duration: 3hrs   [Max Marks:80]

N.B. : (1) Question No 1 is Compulsory.

(2) Attempt any three questions out of the remaining five.

(3) All questions carry equal marks.

(4) Assume suitable data, if required and state it clearly.

1	Attempt any FOUR	[20]
a	Explain the concept of data independence .Discuss the differences between logical and physical data independence	[5]
b	Describe weak entity. Provide an example of weak entity and strong entity.	[5]
c	List and briefly explain SQL aggregate functions with suitable examples	[5]
d	Explain the concept of First Normal Form (1NF).Give example for the same.	[5]
e	Discuss conflict serializability with suitable example.	[5]

2 a	Describe the overall architecture of DBMS with suitable diagram	[10]
b	What is deadlock? Explain wait-die and wound-wait methods with suitable example.	[10]

3 a	Draw an E-R diagram for library management system. Convert it into relational schema	[10]
b	Explain the following Relational Algebra operations with suitable example.	[10]

1) Project 2) Select

3) Union 4) Rename

5) Set difference

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4 a Consider the following employee database. [10]

Employee (<u>empname</u>, street, city, date_of_joining)

Works (empname, company_name,salary)

Company (<u>company_name</u>, city)

Write SQL queries for the following statements.
1. Modify the database so that 'John' now lives in 'Mumbai'.
2. Find all employees who joined in the month of October.
3. Give all employees of 'ABC Corporation' a 10% raise.
4. Find all employees who earn more than average salary of all employees of their company
5. List name of companies starting with letter "A"

b Why there is need of normalization? Explain 1NF, 2NF, 3NF and BCNF with example. [10]

5 a Describe ACID properties with examples [10]

b Explain Lock based (2PL) concurrency control method with example [10]

6 Write short note on the following(Any four) [20]

a Conversion of Specialization to relational schema with suitable example [05]

b Log based recovery [05]

c Role of DBA [05]

d Triggers [05]

e Types of attributes [05]

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