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**CSE201** Enrol. No. A0504124097

[ET]

END SEMESTER EXAMINATION : MAY, 2025

# DATABASE MANAGEMENT SYSTEMS

*Time : 3 Hrs.* *Maximum Marks : 60*

**Note:** ***Attempt questions from all sections as directed.***

## SECTION – A (24 Marks)

*Attempt any* **four** *questions out of* **five.**

*Each question carries* **06** *marks.*

1. Define DBMS and state how DBMS is considered better than the conventional file processing systems.

2. Explain ail the keys used in the design of the database with an example.

3. Discuss Insertion, updation and deletion anomalies? Why are they considered bad illustrate with an example.

4. Discuss the reasons for converting sql query into relational algebra query before the optimization is done.

P.T.O.

5. Show that two-phase locking protocol ensures conflict serializability, and that transactions can be serialised according to their lock points.

## SECTION – B (20 Marks)

*Attempt any* **two** *questions out of* **three**.
*Each question carries* **10** *marks.*

6. (a) Explain Multimedia database in detail. (4)

(b) Consider the following relation and determine the highest normal form for each relation : (6)

(i) R(A,B,C,D,E,F) FD = {C->F,E->A,EC->D,A->B}

(ii) R(A,B,C,D) FD = {A->B,B->C,C->BD}

(iii) R(A,B,C,D,E,F) FD = {AB->CD,CD->EF,BC->DEF,D->B,CE->F}

7. (a) Let R=(A,B,C) and let r1 and r2 both be relations on schema R. Give an expression in domain relational calculus that is equivalent to each of the following :

(i) r1∪r2

(ii) r1∩r2

(iii) r1-r2

(iv) ΠA(r1) (4)

(b) Suppose that we decompose the schema R=(A,B,C,D,E) into (A,B,C) and (A,D,E). show that this decomposition is a lossless join decomposition if the following set F of functional dependencies hold : A->BC, CD->E,B->D,E->A (6)

8. (a) Consider the insurance database below, where the primary keys are underlined. Consider the following SQ1 queries for this relational database.

person(driver-id#,name, address)

car(license,model,year)

owns(driver-id#, license)

accident(report-number,date,location)

participated(driver-id,car,report-number,damage-amount)

(i) Find the amount of people who owned cars that were involved in accidents in 1989.

(ii) Find the number of accidents in which the cars belonging to "John Smith" were involved.

(iii) Add a new accident to the database , assume any values for required attributes.

(iv) Delete the Mazda belonging to "John Smith"

(vi) Update the damage amount for the car with license number (5)

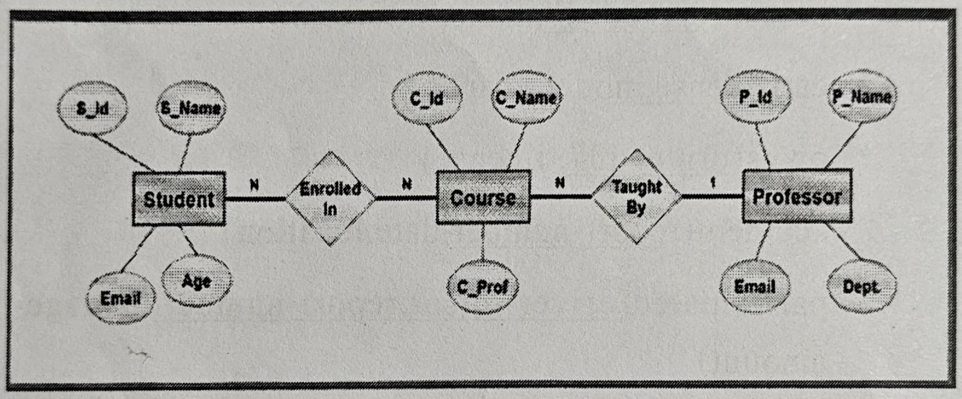
P.T.O.

(b) Define the term concurrency. Also throw some light on why we choose concurrent environment over several mode of execution. Name and explain any one concurrency protocol. (5)

## SECTION – C (16 Marks)

*(Compulsory)*

9. (a) (6)




Design a relational database from the information captured from the above ER diagram.

(b) Discuss the different algorithms for implementing each of the following relational operators and the circumstances under which each Algorithms can be used :

SELECCT,JOIN,PROJECT,UNION,INTERSECT (5)

(c) What are the main reasons for and potential advantages of Distributed Database (5)