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Roll No. ....

**B. TECH. IInd - Year**

FOURTH SEMESTER EXAMINATION, 2007-2008

**TCS-402 DATA BASE MANAGEMENT SYSTEM**

*Time : 3 Hours*

*Maximum Marks : 100*

**Note :** Answer any *FIVE* Questions. All questions carry equal marks.

- ( )
1. (a) What is DBA (Data Base Administrator) ? What are the functions of DBA. (5)
  - (b) Construct an ER diagram of banking enterprise. (5)
  - (c) Explain three level architecture of DBMS in detail. (5)
  - (d) Define the terms, Generalization, Specialization and Aggregation with suitable example. (5)
  2. (a) Consider following scheme for Project Database and write the following queries in SQL and Relational Algebra Project (Project no. Project name, Project manager), Employee (Employee no. Employee name), Assigned to (Project no. Employee no.) :-  
( )
    - (i) Get the details of employees working on both projects P1 and P2.
    - (ii) List the name of employees working on project P1 not on project P2.
    - (iii) Get the details of the employees who are working on the project P3. (5)
  - (b) What do you mean by referential integrity? Define foreign key and discuss the concept behind declaration of foreign keys. (5)

- (c) What are Views ? How is View defined ? Explain with a suitable example. What are the advantages of View? (5)
- (d) Discuss the Selection, Projection and Join operations of relational algebra with suitable example. (5)
3. (a) List the rules of Armstrong's axioms and explain. Explain lossless join decomposition with suitable example. (10)
- (b) What is Normalization? Explain the following normal forms : (10)
- (i) 1 NF
  - (ii) 2 NF
  - (iii) 3 NF
  - (iv) BCNF
4. (a) What do you mean by Transaction? Explain ACID properties of Transaction. Differentiate between recoverable schedule and irrecoverable schedule. (10)
- (b) What is E-R model ? What are the symbols used in this model ? Design an E R diagram for Airline-reservation system consisting of flights, aircrafts, airports, tickets, pilots , crew and passengers. (10)
5. (a) What do you mean by Time stamping protocols for concurrency control ? Discuss multiversion scheme of concurrency control also. (10)
- (b) What do you mean by locking techniques of concurrency control ? Discuss the various locking techniques and recovery with concurrent transaction also in detail. (10)

6. (a) Write the transaction which transfers 10 per cent of the balance from account A to account B. Differentiate check point mechanism with logging facility. (10)

(b) Differentiate between logical data independence and physical data independence. Construct an ER diagram for a hospital with a set of patients and a set of medical doctors Associate with each patient a log of various tests and examination conducted. (10)

7. Attempt any four of the following :

- (a) Trigger
  - (b) DBMS
  - (c) Cascading Rollback
  - (d) Recoverable schedule
  - (e) Serial and Non-serial schedule
  - (f) Network data model
- (20)