Paper / Subject Code: 31902 / Database Management System

(3 Hours)   **[Total Marks : 80]**

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

(2) Attempt any 3 questions out of rest.

(3) Make suitable assumptions if any.

(4) All questions carry equal marks.

1.
   a) Define DBA. Discuss role of DBA   **5**
   b) Explain Components of ER Model   **5**
   c) Explain ACID Properties of transaction   **5**
   d) Explain Database Languages   **5**

2. a) Define Deadlock. Explain Deadlock Detection, Prevention and Recovery   **10**
   b) List 5 Significant differences between file processing system and Database Management System   **10**

3. a) Explain Overall Architecture of DBMS in detail   **10**
   b) Construct ER diagram and convert into Relational Model for Company Which has several Employees working on different types of projects. Several Employees are working on one department. Every Employee has Manager. Several Employees are supervised by one Employee.   **10**

4. a) Explain the concept of Serializability with its types   **10**
   b) Explain following Relational Algebra operations with suitable example   **10**
      a) Project   b) Select
      b) Union   d) Cartesian Product

5. a) Employee(eid,ename,address,city)   **10**
      Works(eid,cid,salary)
      Company(cid,cname,city)
      1) Modify database so that John now lives in Mumbai
      2) Find Employees who live in same city as the company for which they work.
      3) Give all employees of "AZ Corporation" where there is increase in salary by 15%
      4) Find the names of all employees, company name and city of residence such that Employee name begins with 'I'
      5) Delete all tuples in works relation for employees of small bank corporation.
   b) Define Normalization. Discuss 1NF, 2 NF and 3 NF in Detail   **10**

6. Write short notes on any two   **20**
   a) Log Based Recovery
   b) Constraints in SQL
   c) Specialization and Generalization

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