3 Hours   **Total marks: 80**

N.B.: (1) Question **no 1. is compulsory**

   (2) Attempt **any 3 questions** out of remaining questions

   (3) Make suitable assumption if needed

Q.1. (a) List Five significant differences between file processing system and database
         management system.   5M
   (b) Explain ACID properties in details   5M
   (c) Explain View in SQL with Example   5M
   (d) Explain specialization and Generalization with Example   5M

Q2. (a) Draw ER diagram of Hospital management system. Convert ER in to tables   10 M
   (b) What is deadlock? Discuss deadlock detection and prevention scheme   10 M

Q3. (a) Explain any five relational algebra operations in details   10 M
   (b) What is Normalization? Explain 1 NF, 2 NF, 3NF, BCNF with example   10 M

Q.4. (a) For the following given database , write SQL queries.   10 M
         Employee_info (Emp_id, Emp_ name, department, projects, address, DOB, gender)
         Employee_position (Empid, Emp_position, Dateof joing, salary)

   i) Write a query to fetch the number of employees working in the department 'HR'.
   ii) Write a SQL query to retrieve employee details from EmployeeInfo table who have a
         date of joining in the EmployeePosition table.
   iii) Write q query to find all the employees whose salary is between 50000 to 100000.
   iv) Write a query to retrieve EmpPosition along with total salaries paid for each of them.

    (b) Explain overall architecture of DBMS with suitable diagram?   10 M

Q5. (a) Explain various types of constraints with examples?   10 M
   (b) Explain Time stamp protocol and log based recovery in details?   10 M

Q6. (a) Explain Security and Authorization in dbms?   10 M
   (b) Explain serializability and concurrency control with example?   10 M

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