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May-24-0402

CS-401 (Database Management System) [CSE, IT]
B.Tech. 4th (CBCS)

Time : 3 Hours

Max. Marks : 60

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Attempt five questions in all, selecting at least one question each from Section A, B, C & D. Section-E is compulsory.

SECTION - A

1. What is Database system? What are the characteristics of Database approach and how database approach is better than simple file approach? (10)
2. Why is ER model better than hierarchal and network model? Draw ER model of an Air-line System with all its entities, attributes, relationships, keys etc. (10)

SECTION - B

3. What do you mean by Domain Relational calculus? Illustrate Group by and Having clauses with examples. (10)
4. Write SQL query for following consider table EMP (empno, deptno, ename, salary, designation, joining date, DOB, city)
 1. Display names of employees whose experience is more than 10 years.
 2. Display age of employees.
 3. Display average salary of all employees.
 4. Display name of employee who earned highest salary. (10)

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SECTION - C

5. What do you mean by functional dependencies? Explain full, partial and transitive functional dependencies with example. What kind of anomalies can arise in a relation of the above said functional dependencies? (10)
6. What is the difference between two phase locking and two-phase commit in DBMS? Explain with detail. (10)

SECTION - D

7. What are ACID properties of a Transaction? Explain Deadlock Recovery Techniques in centralized DBMS. (10)
8. What is concurrency control and recovery in DBMS? Explain concurrency control and recovery techniques in detail. (10)

SECTION - E (Compulsory)

9. Answer the following questions:
 - A. What is a key constraint?
 - B. What are properties of database approach?
 - C. What is logical data independence?
 - D. What is schema and instance of the database system?
 - E. What is Super key?
 - F. What is Join Dependencies?
 - G. What are four properties of deadlock?
 - H. What is Time-stamp ordering and Multi-version Techniques?
 - I. What do you mean by 5NF?
 - J. What is stored procedure? (10×2=20)