

Roll No. ....

Total Pages : 3

BT-4/J-22

**44185**

DATABASE MANAGEMENT SYSTEM  
Paper-PC-IT-210A

Time : Three Hours]

[Maximum Marks : 75

**Note :** Students will be required to attempt *five* questions in all, selecting at least *one* question from each unit. All questions carry equal marks.

**UNIT-I**

1. (a) Write the advantages of Database Management System (DBMS) over Traditional File Processing System.  
(b) Outline and explain the component of three tier architecture of DBMS. (8+7=15)
2. Differentiate between the following :
  - (a) Primary Key and Super Key.
  - (b) Strong Entity and Weak Entity.
  - (c) Composite and Multivalued Attribute.
  - (d) Specialization and Generalization. (3+4+4+4=15)

**UNIT-II**

3. (a) Write queries for the following tables :  
T1 (Empno, Ename, Salary, Designation)  
T2 (Empno, Deptno.)

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- (1) Display all the details of the employee whose salary is lesser than 10K.
  - (2) Add a new column Deptname in table T2.
  - (3) Find the total salary of all the employees.
  - (4) Display Empno, Ename, Deptno and Deptname.
  - (7) Drop the table T1.
- (b) Why views are used? Write the syntax to create, delete and modify view. (8+7=15)
4. (a) List the operations of relational algebra and write the purpose and syntax of each.
- (b) Differentiate between tuple relational calculus and domain relational calculus. (8+7=15)
- UNIT-III**
5. (a) What is canonical cover? Consider following set F of functional dependencies on schema R (A, B, C) and compute canonical cover for F.
- $A \rightarrow BC \quad B \rightarrow C \quad A \rightarrow B \quad AB \rightarrow C.$
- (b) Explore the different types of anomalies in designing a database. (8+7=15)
6. What do you mean by BCNF? Why it is used and how it is different from 3 NF? Discuss BCNF and 3NF with suitable illustration. (15)

## UNIT-IV

7. (a) Consider schedule S with transaction T1 and T2. T1 transfer Rs. 150 from account A to C and T2 adds Rs. 50 into account A. Prepare concurrent schedule with two phase locking protocol.
- (b) What is concurrency? Briefly explain the lost-update problem of concurrency? (8+7=15)
8. (a) What is deadlock? Explain wait-die and wound-wait for deadlock prevention.
- (b) Explain deferred database modification for log based recovery. Explain role of check point in log base. (8+7=15)

