

Roll No. ....

Total Pages : 03

**BT-5/D-23**

**45169**

**DATABASE MANAGEMENT SYSTEMS**

**PC-CS-301A**

Time : Three Hours]

[Maximum Marks : 75

**Note :** Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

**Unit I**

1. What do you mean by Data Models ? Explain Network, Hierarchical and Relational Model with the help of example. 5,10
2. (a) What is Data independence and also explain why it is required ? 7  
(b) Explain the following attributes : 8
  - (i) Strong Entity
  - (ii) Weak Entity
  - (iii) Derived attribute
  - (iv)  $m : n$  relation with the help of an example.

## Unit II

3. What do you mean by Relational Algebra ? Explain select operation, union operation and cartesian product operation with the help of example. 15
4. (a) What is stored procedure ? Write a procedure to display record of all the students whose marks are greater than 70. 8
- (b) Write a trigger that will be invoked automatically to insert the working\_hours = 0 if someone tries to insert working – hours < 3. 7

## Unit III

5. What do you mean by normalization . Explain BCNF and 3NF and check whether any table data is in BCNF and 3NF with the help of example. 5,10
6. What do you mean by concurrency control and recovery management ? Explain lock based protocol and two phase locking in detail. 5,10

## Unit IV

7. (a) What are different types of failures ? Explain different techniques of recovery. 5

(b) Explain timestamp based concurrency control with the help of an example. 10

8. (a) What do you mean by serializability ? Explain view serializability in detail. 10

(b) What do you mean by dead lock and explain commit and lock in detail with the help of an example. 5

