Roll No. ....   Total Pages : 03

BT-3/D-19   **33082**

DATABASE MANAGEMENT SYSTEM
CSE-205-N/IT-201N

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. (a) What do you mean by mapping ? Discuss the role of mapping in three-layer architecture of DBMS as proposed by ASNI-SPARC. How does this architecture achieve data independence ?

   (b) Who is DBA ? Discuss the responsibilities of DBA.   **8+7=15**

2. (a) With example explain various mapping cardinalities, total and partial participation constraint in ER model.

   (b) Briefly explain the following with example :
       (i)   Foreign key
       (ii) Entity and entity type
       (iii) Simple and single-valued attributes. **8+7=15**

Unit II

3. (a) Explain select, project, union, product and join operations of relational algebra with example.

   (b) What do you mean by views ? How are views created and dropped ?   **8+7=15**

4. (a) Write the meaning, purpose and syntax of the following SQL statements :
       (i) Create   (ii) Update

   (b) What are aggregate functions in SQL ? List any *three* aggregate functions.

   (c) What are triggers ? Write the syntax to create a trigger for each row.   **3×5=15**

Unit III

5. What is Normalization ? Discuss the need of normalization. Explain the normal forms based on full and partial functional dependency and multivalued dependency.   **15**

6. (a) Discuss the main heuristics that are applied during query optimization to improve the processing of the query.

   (b) 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. **8+7=15**

Unit IV

7. (a) What is a deadlock and how is it different from a standard block situation ?

   (b) Discuss the strategies to protect against media failures. 8+7=15

8. (a) What are serial and serializable schedules ? Give example.

   (b) Write a detailed note on concurrency control timestamps. 8+7=15