G 1601 (Pages : 2) Reg. No.....

Name.....

B.Tech. DEGREE EXAMINATION, JULY/AUGUST 2007

Fifth Semester

Branch : Computer Science and Engineering / Information Technology

DATABASE MANAGEMENT SYSTEMS (R, T)

(Improvement / Supplementary)

Time : Three Hours Maximum : 100 Marks

Part A

Answer **all** *questions.*
Each question carries 4 *marks.*

1. How are many-many relationships between entity sets represented in the E-R model ?
2. What do you mean by the term data independence in a DBMS ?
3. Why is the relational database model most popular ?
4. In a database table STUDENT (NAME, AGE, TOTALMARK), write an SQN query to find the name of the student with the highest mark.
5. Give any *three* general rules used in query optimization.
6. Write a trigger by which you ensure that only positive values will be entered into the table STUDENT referred in question 4 above.
7. Define Functional dependency. Write *two* axioms based on FDs.
8. In what way is the 3rd normal form different from BCNF ?
9. For what purpose is the semijoin operation taken ?
10. Briefly describe the essence of the 2-phase committ protocol.

(10 × 4 = 40 marks)

Part B

Answer **all** *questions.*
Each question carries 12 *marks.*

11. (a) What are object-oriented databases ? Giving examples of one or two, cite their features in comparison to relational models.

Or

(b) How are one-to-one relationships between the same entity sets represented in the E.R. models?

Turn over

12. (a) An employee table with the schema (IDNO, NAME, AGE, SEX, MANID) exits. Write SQL statements to (i) group the male and female employees separately. (ii) find those employees in the age group 20 to 30 (both inclusive) in descending order of age and (iii) find whether there exists an employee with more than one managerial.

Or

(b) Compare relational algebra to tuple relational calculus based on the fundamental operations.

13. (a) Using any *two* relations of your choice, calculate the natural join, equijoin and Cartesian product using (i) relational algebra (ii) tuple relational calculus.

Or

(b) What is the need of query optimization ? What techniques are adopted by DBMS to achieve optimized query execution ?

14. (a) Give an example for (i) a relation that is in 1NF but not in 2NF ? (ii) a relation that is in 2NF but not in 3NF. Write the justification for your answer.

Or

(b) What are FDs and MVDs ? Define both. What is the relationship between them?

15. (a) What is data replication ? What is the need for replication of data ? What are the various methods in which replication can be done ?

Or

(b) Describe in detail how database recovery is done using log files.

(5 × 12 = 60 marks)