

**17222**

**Name:** .....

**Reg.No.**

**SECOND SEMESTER M.Sc. DEGREE EXAMINATION, JULY 2011**

**COMPUTER SCIENCE**

**CSC2C02 Database Management System**

**Time : 3 Hours**

**Maximum Weightage : 36**

**PART A**

*Answer all questions. Each question carries 1 weight.*

1. Define view.
2. Define relational model.
3. Define primary key.
4. List four advantages of DBMS.
5. Define third normal form.
6. List ACID properties.
7. Define transaction.
8. What is a class diagram.
9. Differentiate between **tuple** relational calculus and domain relational calculus.
10. What do you mean by Query execution plan?
11. Explain "Distributed data independence".
12. List any four features of **PostgreSQL**

[12 X 1 = 12 Weights]

**PART B**

*Answer any six questions. Each question carries 2 weights.*

13. Explain structure of DBMS.
14. Explain aggregation with suitable example.
15. With suitable examples, explain set operations in relational algebra.
16. With suitable example explain fourth normal form.
17. With Suitable example explain nested queries.
18. Explain the **concurrency** control and serialization.
19. Explain query estimation and query evaluation.
20. Discuss the need for **OODBMS**.
21. Write notes on distributed query processing.

[6 X 2 = 12 Weights]

[Turn Over]

## PART C

Answer any three questions. Each question carries 4 weights.

22. A company database needs to store information about employs (identified by SSN, with salary and phone as attributes); departments (identified by dno, with dname attributes; and children of employees (with name and age as attributes). Employees in departments; each department is managed by an employee; a child must be identified uniquely by name when the parent (who is an employee; assume that only one parent works for the company) is known. Draw an ER diagram that captures this information.

23. Consider the following schema:

Suppliers (sid: integer, sname : string, address: string)

Parts(pid:integer, pname:string, color:string)

Catalog(sid:integer, pid:integer, cost:real)

The catalog relation lists the prices charged for parts by suppliers. Write the following queries in SQL / PostgreSQL.

i. Find the pnames of parts for which there is some supplier.

ii. Find the snames of suppliers who supply every part.

iii. Find the snames of suppliers who supply every red part.

iv. Find the sids of suppliers who charge more for some part than the average cost of a part (averaged over all the suppliers who supply that part).

v. Find the sids of suppliers who supply only red parts.

vi. Find the sids of suppliers who supply a red part or a green part.

24. Suppose you are given a relation R with four attributes, ABCD. For each of the following sets of FDs, assuming those are the only dependencies that hold for R, do the following: (a) Identify the candidate key(s) for R. (b) Identify the best normal form that R satisfies (1NF, 2NF, 3NF or BCNF). (c) If R is not in BCNF, decompose it into a set of BCNF relations that preserve the dependencies.

i.  $C \rightarrow D$ ,  $C \rightarrow A$ ,  $B \rightarrow C$

ii.  $B \rightarrow C$ ,  $D \rightarrow A$

iii.  $ABC \rightarrow D$ ,  $D \rightarrow A$

iv.  $A \rightarrow B$ ,  $BC \rightarrow D$ ,  $A \rightarrow C$

25. Explain the need for locks. Discuss in detail "two phase locking".

26. Give a detailed account of UML.

27. Discuss architecture of distributed databases.

[3 X 4 = 12 Weights]