2031
B.E. (Computer Science and Engineering)
Seventh Semester
CS-702: Advance Database Systems

Time allowed: 3 Hours

Max. Marks: 50

NOTE: *Attempt* _five_ *questions in all, including Question No. 1 which is compulsory and selecting two questions from each Unit.*

x-x-x

I.   Answer the following:-

a) Define granularity and its types?

b) Compare BCNF and MVD.

c) Why is DKNF important?

d) Mention the approaches used for making objects persistent.

e) Compare wait die and wound wait.

f) List various differences between OLAP and Data mining.

g) Compare Star and Snowflake schema.

h) Compare data structures of OODBMS and ORDBMS.

i) Define Dynamic Sparse Matrix handling.   (10)

UNIT - I

II.   You have to design and implement a database that manages information about publishers, authors and books. Some information includes:

• A publisher has a name and an address for the headquarters. Each publisher also has a set of branches, each branch having an address and two phone numbers.

• An author has a name and an address.

• A book is published by a publisher and has a list of authors associated with it. An author can publish several books and a book can be published by at most one publisher.

   i) Design an ODL schema for the above database.
   ii) Write in OQL the following query.   (5)

a) List the name of the author who has published the most books with publisher " TMH".
                                                          (3)
b) Explain how 3PC responds to various types of failures.   (2)

P.T.O.

III. a) Consider a data warehouse about University management system and describe the following OLAP operations:-

    i) Slice   ii) Dice   iii) Rollup   iv) Drill down (6)

    b) Explain advantages and disadvantages of various data mining techniques along with application of each. (4)

IV. a) What is Coarse and fine granularity? Explain with an example that how Multi Granularity protocol ensures serializability, no deadlock, recoverability and cascadelessness. (4)

    b) Explain Lock and timestamp based ordering implementation for Multiversion concurrency control techniques with example. (4)

    c) How early unlocking leads to inconsistency and late unlocking deadlock. (2)

UNIT - II

V. a) What are UDTS? Give an example. (2)

    b) Explain ODMG. When it is necessary? (2)

    c) Explain how 2-phase commit and 3-Phase commit protocol responds to the following failures:

       i)Failure of participating site (2)

       ii)Failure of Coordinator (2)

    d) Compare and Contrast SQL2 and SQL 3 (2)

VI. a) Give Architectural differences Microsoft SQL server, Oracle, IBM DB2 and MySQL (3)

    b) List Advantages and disadvantages of Microsoft SQL server, Oracle, IBM DB2 and MySQL (4)

    c) Give various pros and cons of log based recovery techniques. How shadow paging is able to overcome various pitfalls of log based techniques. Give various disadvantages of shadow paging. (3)

VII. a) Consider a relation that is fragmented horizontally by plant number.

Employee (name, address, salary, plant -number).

Assume that each fragment has two replicas: one stored at the NEW York site and one stored locally at the plant site. Describe a good processing strategy for the following queries entered at the San Jose site.

i) Find the average salary of all employees

ii) Find the highest paid employee at the Toronto site.   (7)

b) Explain various differences in Heuristic and cost based optimization.   (3)

x-x-x