[Total No. of Questions - 9] [Total No. of Printed Pages - 3]
(2125)

15208

B. Tech 6th Semester Examination

Relational Data Base Management System (OS)

CS-6004

Time : 3 Hours **Max. Marks : 100**

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Candidates are required to attempt five questions in all selecting one question from each of the sections A, B, C & D of the question paper and all the subparts of the questions in Section E.

SECTION - A

1. (a) What do you understand by query optimization? Explain the each components of query optimizer with block diagram. (10)

   (b) Why it is not desirable to force users to make an explicit choice of a query processing strategy? Are there cases in which it is desirable for users to be aware of the costs of competing query-processing strategies? Explain your answer. (10)

2. (a) What do you understand by a serial execution and serializable execution of a transaction? Explain why serializable execution is preferred. What is conflict serializability and view serializability?

   (b) Consider two transactions T_1, T_2 and a schedule S with two transactions T_1, T_2 being executed in interleaved fashion. Discuss how the Isolation between T_1 and T_2 guarantees the serializability of schedules. (12+8=20)

[P.T.O.]

SECTION - B

3. What is two-phase locking protocol? Discuss some variations of the two phase locking protocol. And also prove that if two-phase policy is violated then it may not be possible to serialize the execution of concurrent transactions. (20)

4. (a) What is shadow paging? How it is different from log-based recovery? (10)

   (b) Make a list of security concerns for a bank. For each item on your list, state whether this concern relates to physical security, human security, operating system Security, or database security. (10)

SECTION - C

5. What is an Object Oriented Database Management System (OODBMS)? Is an OODBMS a viable alternative to an RDBMS? What are the tradeoffs and benefits of using an OODBMS over an RDBMS? (20)

6. Is it possible to successfully map a binary M:N relation type without requiring a new relation? Justify your answer with suitable example. (20)

SECTION - D

7. What is the client server architecture in distributed data base systems? What do you understand with thin and thick clients? Discuss the environments best-suited for these architectures separately. (20)

8. Explain distributed databases, distributed transactions and distributed query processing in detail. (20)

SECTION - E

9. (a) Differentiate between Temporal and Deductive databases.

(b) Write a short note on estimation of query processing cost.

(c) Why is query expressed in relational algebra preferred over query expressed in SQL?

(d) Write advantages of distributed databases.

(e) Explain the disadvantages of horizontal partitioning for distributed databases.

(f) Explain under what circumstances a snapshot replication approach would be best.

(g) What is distributed deadlock?

(h) Inconsistent retrieval can arise as dirty read or as unrepeatable reads. What is inconsistent retrieval problem in the above statement?

(i) Differentiate between Active databases and Deductive databases.

(j) Explain the purpose of the checkpoint mechanism.

(10×2=20)