Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY
MCA SEM-V Examination- Dec.-2011

Subject code: 650004 **Date: 19/12/2011**
Subject Name: Advanced Data Base Management Systems (ADBMS)
Time: 10.30 am-01.00 pm **Total marks: 70**

Instructions:
1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1 **(a)** Define the terms Data Abstraction and Data Model. Explain in brief three categories of Data Models. How are they related to three levels of the three-schema architecture? **07**

(b) Explain the following concept in brief with diagram **07**
1. The interleaved concurrency and parallel concurrency
2. Double buffering
3. Spanned versus Un-spanned Records

Q.2 **(a)** List any two account level privileges and any two relation level privileges. How these privileges are used in Discretionary Access Control? What do you mean by propagation of privileges? What is Role-based Access Control? **07**

(b) Explain in brief the decisions to be taken during Physical Database Design. **07**

OR

(b)
1. List six ingredients of Public Key Infrastructure scheme. How does it provide security? **07**
2. Write a short note on Digital Signature.

Q.3 **(a)** Explain the terms: Primary Index, Clustering Index, and Secondary Index. What is the difference between dense index and sparse index? What is the advantage of Multi-level index? **07**

(b) Suppose that we have an ordered file with r=30,000 records stored on a disk with block size B=1024 bytes. File records are of fixed size and are un-spanned, with record length R=100 bytes. Assume that the ordering key field of the file is V=9 bytes long, and a block pointer is P=6 bytes long. Assume that we have constructed a primary index file. **07**
1. What is blocking factor (bfr)?
2. How many blocks (b) are required to store file?
3. How many block accesses, at minimum, are required to search a record if no index is used?
4. How many block accesses, at minimum, are required to search a record if the constructed index is used?

OR

Q.3 **(a)** What is Write-Ahead Logging? Explain the concept of Steal/No-Steal and Force/No-Force. What is the usage of dirty bit and pin-unpin bit? **07**

(b) Explain in brief the distributed concurrency control based on a distinguished copy of a data item in DDBMS. **07**

Q.4	**(a)**	Describe the Deductive Databases. Explain with suitable example the concept of Facts, Rules, Recursive Rules, and Queries in deductive database.	**07**
	(b)	What is Distributed Database? Explain the concept of Fragmentation and Replication. What benefits do they offer?	**07**

OR

Q.4	**(a)**	What is Temporal Databases? What is Valid Time Relation? Explain with example how insert, update and delete operations are performed on valid time relation. What is the benefit of attribute versioning over tuple versioning?	**07**
	(b)	List Object-Relational support in SQL-99 and explain any one of them in detail.	**07**
Q.5	**(a)**	Discuss the data management issues in Mobile Databases.	**07**
	(b)	1. What is Service Names? What is the problem with client configurations using tnsnames.ora file? What are the solutions for it? 2. Write a short note on Database Links.	**07**

OR

Q.5	**(a)**	1. Explain any four characteristics of Biological Data in brief. 2. What is GIS? Explain any four methods defined by GIS standards for testing spatial relations and spatial analysis.	**07**
	(b)	What is the purpose of SQL*Loader? Discuss the process of bulk inserts with SQL*Loader in Direct Path mode.	**07**

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