## **GUJARAT TECHNOLOGICAL UNIVERSITY** MCA - SEMESTER-V • EXAMINATION – SUMMER 2013

Subject Code: 650004 Date: 17-05-2013 Subject Name: Advanced Data Base Management System Time: 02.30 pm - 05.00 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) Explain in brief the advantages of using the DBMS Approach. 07 (b) 1. Explain Three-Schema Architecture in brief. 03 2. Explain the terms Logical Data Independence and Physical Data 02 Independence 3. Assume that X and Y are private key and public key, respectively, of 02 user A, and P and Q are private key and public key, respectively, of user B. If message M needs to be send from user B to user A, then which of these keys is used to encrypt the message and which of these keys is used to decrypt the message in a public key infrastructure? (a) 1. Write a short note on the Data and Advanced Encryption Standards Q.2 04 2. Which of the following attributes should be considered for access structure such as Indexing? 03 a) An attribute A which is frequently used in selection condition b) An attribute B which is frequently changed by an update operation c) An attribute C which is frequently used in join condition (b) Differentiate between fixed-length records and variable-length records. 07 What are the reasons for having variable-length records? Discuss the types of separator characters needed for each. OR (b) Discuss the deferred update technique of recovery. What are the 07 advantages and disadvantages of this technique? Why is it called No-UNDO/REDO method? Q.3 (a) Under what situation would de-normalization of a database schema be 07 used? Give examples of de-normalization. (b) What is Mandatory Access Control (MAC)? List typical security classes 07 used in MAC? Explain the concept of filtering and poly-instantiation taking suitable example. OR (a) 1. Write a short note on Type Constructors, an Object-Relational support Q.3 04 in SQL-99. 2. Explain with suitable example the Nested Relational Model. 03 (b) 1. How does Distributed DBMS support increased reliability and 03 availability? 2. What is Data Localization in DDBMS? How does it improve 04 performance? (a) 1. Why does the index file for a primary index need substantially fewer **Q.4** 02 blocks than the data file?

		<ol> <li>Why can we have at most one primary or clustering index on a file, but several secondary indexes?</li> <li>What do you mean by Type Inheritance in Object Relational DBMS?</li> </ol>	02 03
	(b)	<ol> <li>Discuss the merits and demerits of Primary Site Technique and Primary Copy Technique used in distributed concurrency control.</li> <li>What is database link in Oracle? What is snapshot in Oracle? What is the difference between basic replication and advanced (symmetric)</li> </ol>	04
		replication in Oracle?	ve
		OR	
Q.4	(a)	Explain following methods used in GIS (Geographic Information System) in brief: Equal, Cross, Overlap, Distance, Buffer, Union, and Difference.	07
Q.4	(b)	Write a short note on SQL*Plus Copy command.	07
Q.5	(a)	1. Define the terms Distributed Databases and Distributed DBMS (DDBMS).	02
		<ol> <li>What do you mean by Horizontal Fragmentation, Vertical Fragmentation, and Mixed (Hybrid) Fragmentation?</li> </ol>	03
		3. Explain in brief Distribution (Network) Transparency and Replication Transparency.	02
	(b)	Consider the following facts and rules. Note that Supervise(X, Y) means X supervises Y, Superior(X, Y) means X is superior of Y, and Subordinate(X, Y) means X is subordinate of Y.	07
		Facts: Supervise(bh. dd) Supervise(bh. ee) Supervise(bh. ff) Supervise(cc. gg)	
		Supervise(ob, dd), Supervise(ob, ec), Supervise(ob, fi), Supervise(cc, gg), Supervise(cc, hh), Supervise(aa, bb), Supervise(aa, cc)	
		Rules:	
		Superior(X, Y):- Supervise(X, Y).	
		Superior(X, Y):- Supervise(X, Z), Superior (Z, Y).	
		Subordinate(X, Y):- Superior (Y, X). Solve the following queries:	
		1 Superior (aa Y)?	
		2. Superior (bb, ff)?	
		3. Superior (bb, gg)?	
		4. Subordinate (hh, Y)?	
		5. Subordinate (dd, aa)?	
		<ul> <li>5. Superior (gg, Y)?</li> <li>7. Superior (cc. dd)?</li> </ul>	
		OR	
Q.5	(a)	<ol> <li>Distinguish between the Tuple Versioning approach and Attribute Versioning approach. What do you mean by time-varying attribute and non-time varying attribute?</li> </ol>	04
		2. What are the advantages of Truncate command over the Delete	-
	<b>()</b>	command? Write a short note on "noture of multimedia data"	03
	(D)	write a short note on nature of multimedia data".	U7

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