Enrolment No.\_\_\_\_\_

## GUJARAT TECHNOLOGICAL UNIVERSITY M. E. - SEMESTER – I • EXAMINATION – WINTER • 2014

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Subject code: 3715306 Date: 12-01-2			
Su Tir Ins	ne: 0 tructi 1. 2.	2:30 pm - 05:00 pm Total Marks: 70 ons: Attempt all questions. Make suitable assumptions wherever necessary.	
	3.	Figures to the right indicate full marks.	
Q.1	(a)	Design an E-R model of Gujarat Technological University(GTU), depicting attribute set, relationship set, attributes, mapping cardinalities, keys, extended features like generalization/specialization, aggregation.	07
	(b)	Define following terms: (1) Entity (2) Relationship (3) Weak entity set (4) Composite attribute (5) Multivalued attribute (6) Primary key and (7) Discriminator	07
Q.2	(a) (b)	Explain lossless join decomposition in brief with example. What is multivalued dependency? Explain 4NF in detail. <b>OR</b>	07 07
	<b>(b)</b>	What is functional dependency? Explain BCNF in detail.	07
Q.3	(a) (b)	Design an XML file for Student Information System (SIS), which includes various personal and academic information of a student. Also write and XSD and DTD file for XML file you designed for SIS. What is query optimization? Explain it with suitable example relational	07 07
		algebras.	
Q.3	(a) (b)	What is query processing? Explain various steps involved in. Explain A1 and A2 algorithm for file scan and also estimates their respective costs.	07 07
Q.4	<b>(a)</b>	What is distributed database? Explain 2PC protocol and various failures	07
	(b)	associated with it. What is parallel database? Explain various partioning techniques along with their comparisons.	07
Q.4	<b>(a)</b>	Explain single lock manager and distributed lock manager approach for concurrency control in distributed database.	07
	(b)	Explain lock based and graph based protocols for concurrency control.	07
Q.5	<b>(a)</b>	What is nesting and unnesting? Write an example queries to demonstrate arrays, multisets, and inheritance of SQL 1999 standard.	07
	(b)	Explain data mining and data warehousing in brief.	07
Q.5	(a) (b)	What is recovery? Explain log based and shadow page recovery techniques. What is transaction? Explain conflict and view serializability with example schedules.	07 07

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