## **GUJARAT TECHNOLOGICAL UNIVERSITY** MCA - SEMESTER-I • EXAMINATION – WINTER • 2014

Subject Code: 610005 Date: 26-12-2		Code: 610005 Date: 26-12-2014	014
Ti Ins	me: 1	0:30 am - 01:00 pm Total Marks: 70	
	1. 2. 3.	Attempt all questions. Make suitable assumptions wherever necessary. Figures to the right indicate full marks.	
Q.1	(a)	<ul> <li>Define the following terms:</li> <li>1. Database system</li> <li>2. Entity integrity Constraint</li> <li>3. Closure set of FDs</li> <li>4. Aggregation in E-R model</li> <li>5. Dependency preservation</li> <li>6. Assertion</li> <li>7. trival and non-trival dependencies</li> </ul>	07
	<b>(b</b> )	What is DBMS? Explain merit and demerit of database Management Systems.	07
Q.2	(a)	Explain Three level architecture ? If we change physical level do we require to change any higher levels?	07
	(b)	Distinguish between a weak entity set and a strong entity set. Explain how a weak entity set can be converted into a strong entity set and how it can participate in relationships, giving suitable examples.	07
	<b>(b</b> )	What is E-R model. Draw the E-R Diagram of Banking Enterprise System.	07
Q.3	(a) (b)	Explain Referential Integrity constraints with example ? Define the concept of aggregation in E-R model. Give two examples where aggregation is useful.	07 07
Q.3	(a)	Distinguish between entity sets and relationship sets. Also, compare binary relationship sets and n-ary relationship sets.	07
	<b>(b)</b>	State Armstrong's axioms to find logically implied functional dependencies. Use these axioms to prove the soundness of the decomposition rule.	07
Q.4	(a)	Define the constraint multivalued dependency. Explain fourth normal form (4NF). Why is 4NF more desirable than BCNF ?	07
	<b>(b)</b>	Explain Functional dependency and Trivial functional dependency with examples.	07
0.4	$(\mathbf{a})$	OR Evaluin Canonical cover and Extraneous Attributes with examples	07
Q.4	(a) (b)	In case of bad database design, what anomalies may arise ?. Explain with example.	07 07
Q.5	(a)	What is UML ? Explain the parts of UML ? Show the UML class diagram notations for its equivalent E-R diagram constructs.	07
	<b>(b</b> )	Describe different types of information stored in data dictionary.	07

- Q.5 (a) Explain what is meant by "repetition of information " and " inability to represent information". Explain why each of these properties may indicate a bad relational database design.
  - (b) Compare the terms primary key, candidate key and super key, giving suitable 07 examples. Also, explain the mapping cardinalities that can exist between two entity sets in a binary relationship.

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