Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME - SEMESTER–II • EXAMINATION – SUMMER - 2017

Subject Code: 2722318 Date: 31/05/2017

Subject Name: Database Management Systems

Time: 02:30 PM To 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)** (i) Explain three level architecture of database system **03**

(ii) Explain major functions of DBA **04**

(b) (i) Design a generalization–specialization hierarchy for a motor-vehicle sales company, which sells motorcycles, passenger cars, vans, and buses. **04**

(ii) Explain the distinction between disjoint and overlapping constraints. **03**

Q.2 **(a)** Consider following schema and give expression in relational algebra and write SQL query for the given statements.

- employee (person-name, street, city)
- works (person-name, company-name, salary)
- company (company-name, city)
- manages (person-name, manager-name)

(1) Find the name of all employees and their manager who work for "Yes Bank" **02**

(2) Find the names and cities of residence of all employees who work for "Yes Bank" and salary more than 15000. **02**

(3) Find the names, company and cities of residence of all employees whose city and company city are same. **03**

(b) Consider the following relation schema and set of FD's F. **07**

R = { A, B, C, D, E}

A → BC CD → E B→D E→ A

i) Find out closure of F

ii) Find out canonical cover of F

iii) Find out attribute closure of A. is A a candidate key or not?

OR

(b) What is Functional Dependency? Explain lossless decomposition with suitable example. **07**

Q.3 **(a)** Explain system recovery procedure with check point record concept. **07**

(b) Define and explain with suitable example: **07**
entity, binary relationship, multi value attribute, derived attribute

OR

Q.3 **(a)** List the ACID properties. Explain the usefulness of each. **07**

(b) Construct an ER diagram considering a database used to record the marks that students get in different exams of different course offerings. **07**

Q.4 **(a)** Explain 1NF, 2NF, 3NF and BCNF with example. **07**

(b) What is recoverable schedule? Why is recoverability of schedules desirable? **07**

OR

Q.4	**(a)**	What is Joins? Explain types of Join with example.	**07**
	(b)	(i) What is constraint in database? Explain types of constraints with suitable example.	**05**
		(ii) List the benefits of database approach.	**02**
Q.5	**(a)**	Explain system recovery procedure with check point record concept	**07**
	(b)	(i) Why concurrency control is needed?	**03**
		(ii) Explain basic concept of referential integrity with use of update and delete operation.	**04**

OR

Q.5	**(a)**	(i) Explain following terms with suitable example. Super key, candidate key, primary key	**03**
		(ii) With example explain various mapping cardinalities.	**04**
	(b)	(i) Explain deadlock detection mechanism.	**04**
		(ii) What is deadlock? Explain Wait-For-Graph.	**03**

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