



JK LAKSHMIPAT UNIVERSITY, JAIPUR

INSTITUTE OF ENGINEERING AND TECHNOLOGY

End Term Examination (Regular/Backlog), April-May 2015

B. Tech. in Computer Science & Engg. , Semester IV

Roll No.....

CSE 401: Database Management Systems

Time: 3 hours

Max. Marks: 100

Instructions to students:

1. Do not write anything other than your roll number on question paper.
2. Assume suitable data wherever required and mention it clearly.
3. Writing appropriate units, nomenclature, and drawing neat sketches/schematics/ flow chart wherever, required are an integral part of the answer.

Q.1A Attempt all questions (10 questions @ 1 mark) 10

- i. Relational Algebra is a _____ query language that takes two relation as input and produces another relation as output of the query.
(a) Relational (b) Structural (c) Procedural (d) Fundamental
- ii. In SQL, which command is used to add new rows to a table?
(a) alter table (b) add row (c) insert (d) append
- iii. A logical schema
(a) is the entire database (b) is a standard way of organizing information into accessible parts (c) describes how data is actually stored on disk (d) All of the above
- iv. A scheme describes
(a) data elements (b) records and files (c) record relationships (d) all of the above
- v. State whether following statements are true or false.
 - o Primary key can contain null values.
 - o Unique key can contain null values.
- vi. State true or false
 - o The relational schema stores data in trees.
- vii. Consider the following relations for a database that keeps track of student enrollment in courses and the books adopted for each course:

STUDENT(Ssn, Name, Major, Bdate)

COURSE(Course#, Cname, Dept)

ENROLL(Ssn, Course#, Quarter, Grade)

BOOK_ADOPTION(Course#, Quarter, Book_isbn)

TEXT(Book_isbn, Book_title, Publisher, Author)

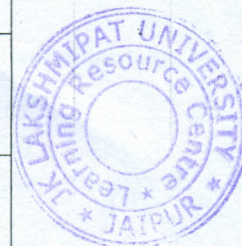
Specify the foreign keys for this schema, stating any assumptions you make.



viii.	A.....is a program that serves as an interface between application program and a set of coordinated and integrated physical files.	
ix.	What undesirable dependencies are avoided when a relation is in 2NF?	
x.	What is Commit?	
Q.2	Short answer type questions (4 questions @ 2.5 marks)	10
i.	What do you mean by constraints? Explain Key constraints in context of ER model.	
ii.	Describe the three levels of data abstraction.	
iii.	Explain the concept of specialization and generalization with example.	
iv.	Explain the purpose of the checkpoint mechanism.	
Q.3A	What are the responsibilities of the DBA and the database designers?	05
Q.3B	What is the difference between file processing system and DBMS? What are the advantages and disadvantages of DBMS over file processing system?	05
Q.4A	What does the term <i>unnormalized relation</i> refer to? How did the normal forms develop historically from first normal form up to Boyce-Codd normal form?	05
Q.4B	What is recoverable schedule? Why is recoverability of schedule desirable? Are there any circumstances, under which it would be desirable to allow non-recoverable schedule?	05
Q.5A	What is two phase locking? Describe with the help of an example. Will two phase result in deadlock? Justify your answer with the help of an example.	05
Q.5B	Define functional dependencies. By Consider the following relation: REPORT (S#, SName, C#, CTitle, Iname, Room#, Marks, Grade) S# = Student Number SName = Student Name C# = Course Number CTitle = Course Title Iname = Name of instructor who delivered the course Room# = Room number which is assigned to respective instructor Marks = Scored in course by the student Grade = obtained by student in course • Draw Dependency diagram • Implement the Full, Partial and Transitive dependency	05
Q.6A	Consider two sets of FDs: F= A->B AB->C D->AC D->E G= A->BC D->AB (a) F covers G (b) F&G are equal (c) G cover F (d) None.	05

- Q.6B What is deadlock? When does it occur? How is it detected in database system? How can it avoided? 05
- OR
- Q.6B What is transaction? Discuss the ACID properties of a database transaction. 05
- Q.7A Draw E-R diagram for supplier who supplies different parts. The parts are used in different projects. Explain the mapping cardinality used. Assume suitable attributes. 05
- Q.7B Normalize (decompose) following relation into lower to higher normal form. (From 1NF to 3 NF) 05

PLANT	MANAGER	MACHINE	SUPPLIER_NAME	SUPPLIER_CITY
Plant-A	Ravi	Lath Boiler	Jay industry Abb appliance	Ahmedabad Surat
Plant-B	Meena	Cutter Boiler CNC	Raj machinery Daksh	Vadodara Rajkot Ahmedabad



- OR
- Q.7B What do you mean by serializability? Discuss the conflict and view serializability with suitable example. 05
- Q.8A Consider following schema and represent given statements in relation algebra form. 10
- *Loan(loan_number, branch_name, amount)
- *Customer(customer_name, customer_street, customer_city)
- *Depositor(customer_name, acc_no)
- *Borrower(customer_name, loan_number)
- (i) Find out all tuples in which the amount is more than 1200 Rs.
- (ii) Find those tuples pertaining to loans of more than 1200 Rs made by the 'abc' branch.
- (iii) Find out customers who live in 'xyz' city.
- (iv) Find out names of all bank customers who have either an acc_no or a loan_number or both.
- (v) Find out names of bank customers who have an acc_no but no loan_number
- (vi) Find out the names of all customers who have a loan at the 'abc' branch.

- Q.9A What is log? How is it maintained? Discuss the salient features of deferred data base modification and immediate data base modification strategies in brief. 10
- Q.9B Consider following schema and write SQL for given statements. 10
- Create the table: employee
- Description (EMPLOYEE_ID, FIRST_NAME, LAST_NAME, SALARY, JOINING_DATE, DEPARTMENT)
- Get all employee details from the employee table
 - Get First_Name, Last_Name from employee table
 - Get unique DEPARTMENT from employee table



- Get employee details from employee table whose employee name are “John” and “Roy”
- Get names of employee start with character ‘S’.

OR

Q.9B

Consider the following relation:

10

CAR_SALE (Car#, Date_sold, Salesperson#, Commission%, Discount_amt)

Assume that a car may be sold by multiple salespeople, and hence {Car#, Salesperson#} is the primary key. Additional dependencies are
Date_sold → Discount_amt and
Salesperson# → Commission%

Based on the given primary key, is this relation in 1NF, 2NF, or 3NF? Why or why not? How would you successively normalize it completely?