



VI SEMESTER B.Tech DEGREE END SEMESTER EXAMINATIONS
CSE-3281 Database Management Systems (Open Elective)
03-05-2017

Duration: 3 Hours

Max. Marks: 50

Instructions to Candidates

- Missing data may be suitably assumed.
- Draw diagrams wherever applicable

- Explain the different categories of database users. **4M**
 - With a neat diagram explain the various stages of query processing? **3M**
 - With examples show how the composite attributes, multi valued attributes and weak entity sets are converted to relational schema. **3M**

- | branch_name | account_number | Balance(\$) |
|-------------|----------------|-------------|
| udupi | 101 | 500 |
| udupi | 102 | 650 |
| mangalore | 103 | 700 |
| mangalore | 104 | 450 |
| Bangalore | 110 | 330 |
| Bangalore | 121 | 780 |
| Bangalore | 123 | 660 |

For the above **Branch** table, write the relational algebra for the following queries

- Find the highest balance in each branch
- Find the number of accounts in each branch
- Find the account numbers in Udupi or Mangalore whose balance lies in the range of 400 and 800
- Find the account numbers which are odd or whose branch name contain the substring "lor". **4M**

- Explain the mapping cardinality constraints on entity sets and show their representation using ER model. **4M**
 - Explain the division and intersection relational algebra operations with examples. **2M**
- Write SQL DDL commands to create an Instructor table with ID, Name, Department_name, salary and age as fields. ID uniquely identifies a row in the table, Department_name references another table department, age can NOT have null values and salary cannot be less than 50000. Write query to display the number of instructors whose age is greater than

- 30 and salary less than 30000. **3M**
- B. Consider an Instructor table with following fields: Id, Name, department_name and Salary. Id is the primary key. Write separate SQL queries to display the department wise maximum, average, sum of all salaries and number of instructors. **4M**
- C. With query examples demonstrate insert, delete and update commands of SQL. **3M**
4. A. Write a java code to insert 3 tuples into an existing student table with student_id, name and cgpa as fields. Display the student details with more than 6 cgpa , in the same code. Write the exception handling statements wherever applicable. **5M**
- B. Explain 1 NF, 2NF and 3NF using examples. **3M**
- C. State the 4 design guidelines for better relational database design. **2M**
5. A. Explain the ACID properties of Transaction taking the example of fund transfer in banking system. **4M**
- B. Consider two transactions T1 and T2. T1 transfers 100\$ from account A to account B and T2 transfers 200\$ from A to B. Show the serial schedule of the transactions and its equivalent concurrent schedule. **4M**
- C. What is deadlock situation in transaction? Explain the same taking two transactions example. How can it be prevented? **2M**
