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10CS54

**Fifth Semester B.E. Degree Examination, June/July 2017**  
**Database Management Systems**

Time: 3 hrs.

Max. Marks:100

**Note:** Answer any FIVE full questions, selecting atleast TWO questions from each part.

**PART – A**

- 1 a. Discuss the main characteristics of the database approach. How does it differ from traditional file system? (08 Marks)  
b. With a neat diagram, explain the component modules of DBMS and their interactions. (08 Marks)  
c. Define i) Snapshot ii) Metadata iii) Intention iv) Database. (04 Marks)
- 2 a. Design an ER diagram for an employee database with atleast four entities considering all the constraints. (08 Marks)  
b. What are the structural constraints on a relationship type? Explain with examples. (04 Marks)  
c. Define i) Primary key ii) Weak entity type iii) Candidate key iv) Recursive relationship with an example. (08 Marks)
- 3 a. Explain Explicit or Schema based constraint on relational model. (06 Marks)  
b. Discuss any 4 relational algebra operations with examples. (08 Marks)  
c. Consider the following schema :  
Sailors (Sid, Sname, rating, age)  
Boats (bid, bname, color)  
Reserves (Sid, bid, day)  
Write the queries in relational algebra.  
i) Find the names of sailors who have reserved boat no '103'.  
ii) Names of Sailors who have reserved red and green boat. (06 Marks)
- 4 a. Explain the different constraints that can be applied during table creation in SQL with example. (06 Marks)  
b. Explain how group by clause works. What is the difference between where and having clause. (04 Marks)  
c. Consider the following schema and write the SQL queries :  
Emp (SSN, name, Addr, Sal, Sex, Dno)  
Dep (Dno, Dname, Mgrssn)  
DeptLoCN(Dno, DLocn)  
Proj (Pno, Pname, Plocn, Dno)  
Workson (SSN, Pno, Nohrs)  
Dependent (SSN, Deptname, Deptsex, Depnt Relationship)  
i) Retrieve the managername with atleast one dependent.  
ii) Retrieve the Pno, Pname, no of hrs works done on each project.  
iii) Retrieve the Pname which are controlled by 'Research' dept.  
iv) Retrieve employee name who works for dept no 10 and have a daughter.  
v) Retrieve the employee name who work on any project that Kumar works. (10 Marks)

**PART – B**

- 5 a. How is view created and dropped? What problems are associated with updating views? (08 Marks)  
b. How are triggers and assertions defined in SQL? Explain. (06 Marks)  
c. Explain the concept of Stored procedure in brief. (06 Marks)
- 6 a. State the informal guidelines for relational schema design. (06 Marks)  
b. Define First, Second and Third normal forms by taking an example. (08 Marks)  
c. What are the inference rules on FDs? How they are useful? Explain with examples. (06 Marks)
- 7 a. Explain the properties of Relational Decomposition. (06 Marks)  
b. Define Multivalued dependency. Explain 4NF with an example. (08 Marks)  
c. Consider  $R = \{A, B, C, D, E, F\}$   
FDS  $\{ AB \rightarrow CD ; D \rightarrow CF , B \rightarrow F , BYD \rightarrow F , D \rightarrow F , DE \rightarrow F \}$   
What is the key of R? Find an irreducible cover for this set of FD's. (06 Marks)
- 8 a. What are ACID properties? Explain with example. (06 Marks)  
b. Briefly discuss the two phase locking protocol used in concurrency control. (08 Marks)  
c. Briefly explain the recovery process. (06 Marks)

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