CRASH COURSE

CENTRAL LIBRARY

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10CS54

Fifth Semester B.E. Degree Examination, May 2017
Database Management Systems

Time: 3 hrs. Max. Marks:100

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

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

PART – A

1 a. Briefly discuss the advantages of using DBMS. **(10 Marks)**

b. Explain the difference between logical and physical data independence. **(04 Marks)**

c. With a diagram, describe the three schema architecture of database systems. **(06 Marks)**

2 a. Design an E-R diagram for keeping track of information about a bank database taking into account atleast four entities. **(10 Marks)**

b. Define an entity and an attribute. Explain the different type of attributes that occur in an ER model with an example. **(10 Marks)**

3 a. Discuss the entity integrity and referential integrity constraints. Why each is considered important? **(05 Marks)**

b. Discuss the various types of Join operations. Why is theta join required? **(05 Marks)**

c. List the operations of relational algebra and the purpose of each. **(10 Marks)**

4 a. Explain the ALTER TABLE command. Explain how a new constraint can be added and also an existing constraint can be removed using suitable examples. **(08 Marks)**

b. Explain the syntax of a SELECT statement in SQL. Write the SQL query for the following relation algebra expression. **(06 Marks)**

$\Pi_{Bdate,\ Address}\ (\sigma_{Fname = \text{"John"}}\ \text{AND}\ _{Mname = \text{"SMITH"}}\ \text{AND}\ _{LNAME = \text{"JACK"}}\ (\text{EMPLOYEE}))$.

c. List the data types that are allowed in SQL. **(06 Marks)**

PART – B

5 a. How is a view created and dropped? What problems are associated with updating of views? **(10 Marks)**

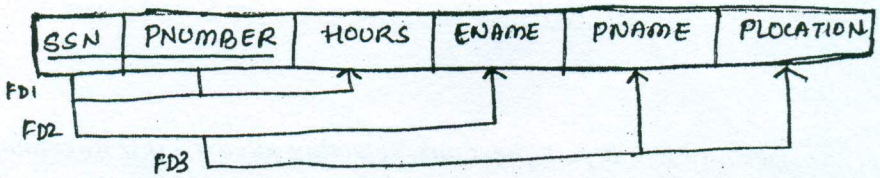
b. Consider the following relations and write SQL queries :
Employee (Fname, SSN , Salary , Super_SSN , DNo , Address)
WORKS ON (ESSN, PNo, Hour)
Department (Dnumber, Dname, Mgr_SSN)
Dependent (ESSN, Dependent _Name). **(05 Marks)**

i) Retrieve all employees in department 5 and whose salary is between $ 10,000 and $ 5,000.
ii) Retrieve the salary of every employee and all distinct salary values.
iii) Retrieve the names of employees who have no dependents.
iv) Hike the salary by 10% for all employees in the Research Department.
v) Add a new type of Department entity / relation.

c. Write a note on aggregate functions in SQL. **(05 Marks)**

6 a. Define First, Second and Third normal forms with an example. **(10 Marks)**

b. What is a Functional dependency? Consider the relation schema and normalize the relation into 2NF. **(10 Marks)**



7 a. Which normal form is based on the concept of multi valued functional dependency? Explain the same with an example. **(10 Marks)**

b. Explain Attribute Preservation and Functional dependency preservation of a decomposition. **(10 Marks)**

8 a. Briefly discuss the two phases locking protocol used in concurrency control. **(10 Marks)**

b. Explain the problems that can occur when concurrent transactions are executed. Give examples. **(10 Marks)**

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