

CRASH COURSE

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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.

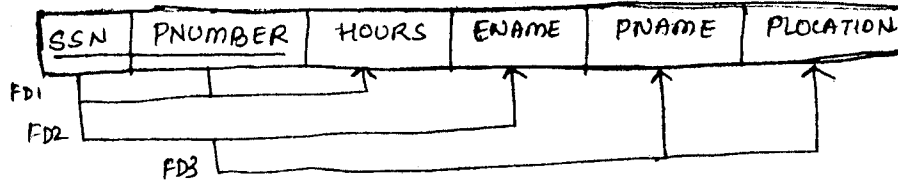
PART – A

- 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)
 $\Pi_{Bdate, Address} (\sigma_{Fname = "John" \text{ AND } Mname = "SMITH" \text{ AND } LNAME = "JACK"} (EMPLOYEE))$.
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) (05 Marks)
Dependent (ESSN, Dependent_Name).
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)
