

USN Jaiore 1

10CS54

Fifth Semester B.E. Degree Examination, Dec.2018/Jan.2019 Database Management System

Time: 3 hrs.

Max. Marks:100

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

PART-A

- a. Define Database Management System. Write a note on Actors on the Scene and workers behind the scene. (10 Marks)
 - b. Define Data Model. Write a neat diagram of Three Schema Architecture. (06 Marks)
 - c. Define Logical and Physical data Independence.

(04 Marks)

- 2 a. Discuss the role of a high level conceptual data model in the database design process.
 (10 Marks)
 - b. Design an E R diagram for University database. Consider minimum five entities and indicate Cardinality ratio. (10 Marks)
- 3 a. List important characteristic of Relations.

(04 Marks)

- b. Which constraint is violating for the below operations:
 - i) Insert < 'Arun', 'K', 'Sharma', NULL, '10-8-1990', '# 123, 3rd main', 'm', 20000, NULL, 4> into EMPLOPYEE.
 - ii) Delete the EMPLOYEE tuple with SSN = 123'.
 - iii) Update the DNO of the EMPLOYEE tuple with SSN = 123 to 1.

(06 Marks)

c. Consider the schema given below and answer the Queries using Relational algebra operators.

EMPLOYEE (FN, MI, LN, SSN, Address, B_date, Sex, Salary, SuperSSN, DNO)

DEPARTMENT (Dname, Dnumber, MgrSSn, Mgr_Start_date)

DEPT LOCATION (Dnumb, Dlocation)

PROJECT (Pname, Pnumber, Plocation, Dnum)

WORKS ON (WSSN, PNO, HOURS)

DEPENDENT (DSSN, Dependent name, D_sex, Dep_B_date, Relationship)

- i) Retrieve the name, address, salary of employees who work for 'Research department'.
- ii) Find the names of employees who work on all projects controlled by Department Number 4.
- iii) Retrieve the SSN of all employees who either work in department No: 4 or directly supervise an employee who work in dept number 4.
- iv) Retrieve the names of employees who have no dependents.
- v) Retrieve each department number, the number of employees in the department and their average salary. (10 Marks)
- 4 a. Write the syntax of the following:
 - i) CREATE
 - ii) ALTER
 - iii) DROP
 - iv) SELECT
 - v) INSERT

(10 Marks)

- b. Consider the schema in 3(c) and answer the Queries using SQL commands.
 - Retrieve sum of salary of all employees.
 - ii) Find all employees who were born during 1990s.
 - iii) Retrieve the names of all employees who do not have supervisors.
 - iv) Retrieve the name of each employee who has a dependent with same name and sex of the employee.
 - v) Find the maximum and minimum salary of the employees working in 'Admin department'. (10 Marks)

5	a. Write short notes on :	
5	i) Constraints as Assertion and Trigger ii) Virtual tables.	(10 Marks)
	b. Explain Embedded SQL and Dynamic SQL.	(10 Marks)
6	a. List and explain the four Informal design guidelines for Relation schemas.	(10 Marks)
	b. Define Functional Dependency. Explain 1 NF, 2 NF with an example.	(10 Marks)
7	a. Define Boyce - Codd Normal Form. Explain 4 NF and 5 NF.	(10 Marks)
	b. Write a note on:	
	i) Discretionary Access Control ii) Mandatory Access Control.	(10 Marks)
8	a. Explain four important properties of Transaction.	(10 Marks)
	b. Write a note on:	(10 1111113)
	i) 2 PL ii) ARIES.	(10 Marks)
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