



USN

--	--	--	--	--	--	--	--	--	--

10CS54

Fifth Semester B.E. Degree Examination, Dec.2019/Jan.2020
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. What are the main characteristics of Database Approach? Explain any one. (06 Marks)
b. Explain the component modules of DBMS, with the help of a diagram. (10 Marks)
c. Define the following :
i) DBMS ii) Metadata iii) Logical data Independence
iv) Physical data Independence. (04 Marks)
- 2 a. What is Recursive Relationship? Explain the significance of role names in recursive relationship with an example. (06 Marks)
b. Design an E-R diagram for a Bank database taking into account at least 5 entities. (10 Marks)
c. Explain Derived Attributes. (04 Marks)
- 3 a. Consider the following database schema :
SAILORS (Sid , Sname , rating , age)
BOATS (bid , bname , color)
RESERVES (sid , bid , day)
Write queries in relational algebra to
i) Find names of sailors who have reserved a red and a green boat.
ii) Find the names of sailors with age above 25 years who have not reserved a red boat.
iii) Find name , age of sailors who have reserved boat number '100'. (09 Marks)
b. Discuss entity integrity and referential integrity constraints with suitable examples. (06 Marks)
c. Explain MINUS operation of relational algebra with an example. (05 Marks)
- 4 a. Explain the schema change statement in SQL with examples. (08 Marks)
b. Consider the following database schema :
EMP (Name , SSn , Salary , Superssn , Dno)
DEPT (Dnum , Dname , Mgr_SSn)
WORKS_ON (ESSN , Pno , Hours)
PROJ (Pname , Pnumer , Dnumber)
Write SQL queries for the following :
i) Retrieve name of an employee having second highest salary.
ii) For each employee, retrieve employee's name and his or her immediate supervisor name.
iii) Make a list of all project numbers for projects that involve an employee whose name is 'Raj' either as a worker or as a manager of the department that controls the project.
iv) Retrieve the total number of employees in 'Research' department. (12 Marks)

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 – B

- 5 a. How are triggers and assertions defined in SQL? Explain with examples. (10 Marks)
b. What is a Cursor? Explain retrieving multiple tuples with embedded SQL with an example. (10 Marks)
- 6 a. List the informal design guidelines for relational schema and explain with example update anomalies. (08 Marks)
b. What is functional dependency? When do we say a set of functional dependencies is minimal? (05 Marks)
c. What is Normalization? Explain 3NF, with an example. (07 Marks)
- 7 a. Which normal form is based on the concept of multivalued dependency? Explain it with an example. (10 Marks)
b. Explain Non – additive (Lossless) join properly of a decomposition. (10 Marks)
- 8 Write short notes on :
a. ACID properties.
b. Two – phase locking protocol.
c. The lost update problem.
d. State transition diagram of a transaction. (20 Marks)
