BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: B.TECH
BRANCH: CSE/IT

SEMESTER : IV
SESSION : SP/2023

SUBJECT: CS237 DATABASE MANAGEMENT SYSTEM

TIME: 3 Hours

FULL MARKS: 50

INSTRUCTIONS:
1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
4. Before attempting the question paper, be sure that you have got the correct question paper.
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

			CO	BL
Q.1(a)	With suitable example explain the following terms:(i) weak entity (ii) multivalued attribute and(iii) derived attribute	[5]	CO1	BL2
Q.1(b)	Construct an E-R diagram for a car insurance company whose customers own one or more cars each. Each car has associated with it zero to any number of recorded accidents. Each insurance policy covers one or more cars, and has one or more premium payments associated with it. Each payment is for a particular period of time, and has an associated due date, and the date when the payment was received.	[5]	CO1	BL6

Q.2(a) Consider the below two tables for reference and solve the following queries using SQL. [5] CO2 BL6.

Table - EmployeeDetails

EmpId	FullName	ManagerId	DateOfJoining
121	Raj Singh	321	01/31/2019
321	Ram Agarwal	986	01/30/2020
421	Kuldeep Rana	876	27/11/2021

Table - EmployeeSalary

EmpId	Project	Salary
121	P1	8000
321	P2	10000
421	P1	12000

(i)Write an SQL query to fetch employee names having a salary greater than or equal to 5000 and less than or equal to 10000.
(ii)Write an SQL query to fetch the project-wise count of employees sorted by project's count in descending order.
(iii)Write SQL query to find the 2nd highest salary from a table EmployeeSalary

Q.2(b) Consider the following Schema: [5] CO2 BL6
Suppliers(sID, sName, address)
Parts(pID, pName, colour)
Catalog(sID, pID, price)
Solve the following queries in relational algebra.
(i)Find the names of suppliers who supply some red part.
(ii)Find the IDs of suppliers who supply some red part or are based at "21 AJC Bose Street."
(iii) Find the IDs of suppliers who supply some red part and some green part.

PTO

Q.3(a)	When a multi-valued dependency exists in a relation. Also illustrate how to handle it using 4th Normal form.	[5]	CO3	BL4
Q.3(b)	How BCNF is different from 3 NF. Demonstrate with suitable example.	[5]	CO3	BL4
Q.4(a)	What is the Response time for a query-evaluation plan? Illustrate the steps of Query processing.	[5]	CO4	BL4
Q.4(b)	Differentiate between Dense and Sparse Index. Also illustrate the insertion and deletion of records using both Dense and Sparse indexed approaches.	[5]	CO4	BL4
Q.5(a)	Examine the schemes for Deadlock Prevention in Transaction Processing	[5]	CO5	BL3
Q.5(b)	Explain schedules in RDBMS . Also Illustrate a graph based approach to check for the conflict serializability of a schedule.	[5]	CO5	BL 4

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