

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI  
(MID SEMESTER EXAMINATION SP/2023)

CLASS: IMSc  
BRANCH: MATHS & COMP.

SEMESTER : IV  
SESSION :  
SP/2023

SUBJECT: CS301 DATABASE MANAGEMENT SYSTEM

TIME: 02 Hours

FULL MARKS: 25

**INSTRUCTIONS:**

1. The question paper contains 5 questions each of 5 marks and total 25 marks.
  2. Attempt all questions.
  3. The missing data, if any, may be assumed suitably.
  4. Tables/Data handbook/Graph paper etc., if applicable, will be supplied to the candidates
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Q.1(a)	Who is DBA and what its role?	[2]	CO1	1
Q.1(b)	Discuss abstract view of the database.	[3]	CO1	2
Q.2(a)	Reduce the below (Q.2(b)) E-R diagram into their equivalent tables.	[2]	CO4	3
Q.2(b)	Design an E-R diagram (with suitable assumption) for a Bank include the entities Customer, Employee, Account, Loan.	[3]	CO3	6
Q.3(a)	Explain the distinction between Disjoint & overlapping design constraints with suitable examples.	[2]	CO3	2
Q.3(b)	Discuss the following with suitable examples: a) Primary key & foreign key b) Candidate key & alternate key c) Super key, secondary key	[3]	CO2	2
Q.4(a)	Given two relation R1 & R2 wherein R1 contains N1 tuples & C1 attributes and R2 contains N2 tuples & C2 attributes, give the result produced by these Relational expressions. a) $R1 \times R2$ b) $\pi_a(\sigma_{a=5}(R1))$	[2]	CO4	5
Q.4(b)	Consider the following database & write the expression in Relational Algebra for the following queries: Employee (emp_id, emp_name, emp_city, emp_addr, emp_dept, join_date) i) Display the emp_id, of employee who live in city 'Pune' or 'Nagpur'. ii) Delete employee record with emp-id as 123. iii) Display the total number of employees whose dept is 50.	[3]	CO4	5
Q.5(a)	List different types of database users.	[2]	CO1	2
Q.5(b)	Discuss Join and Division operation with suitable example.	[3]	CO2	2

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