

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION SP2023)

CLASS: BTECH
BRANCH: IT

SEMESTER : IV
SESSION : SP2023

SUBJECT: CS247 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

			CO	BL
Q.1(a)	Give two functions of a DBA.	[2]	1	1,2
Q.1(b)	Give 1 example each where a DBMS is better and where a traditional file system is better. Justify your answer.	[3]	1	2,3
Q.2(a)	Define super keys, candidate keys, primary keys and a discriminator.	[2]	1	1
Q.2(b)	Illustrate the roles of a buffer manager and a transaction control manager.	[3]	1	1,2
Q.3(a)	Construct an ER diagram (including important attributes) for a car insurance database that includes data about customers (car owners), cars, accidents, and injured drivers. Note that any customer can insure many cars, each car may have different drivers at different times and accidents typically involve one or more cars. For this problem, show at least one generalization and at least one use of ternary or n-ary relationship.	[3]	2	3,5,6
Q.3(b)	Draw two separate ER diagrams where the concept "accident" is an entity and a relationship respectively. One of the two ER diagrams may be satisfied with the first diagram with attributes.	[2]	2	3,5,6
Q.4	Consider the following schema: Emp(eid, ename, age, salary) Works(eid, did, in_time, job) Dept(did, dname, budget, managerid) Write Queries in Relational Algebra: 1. Find employee names and their departments whose age is better than some employee named 'X' 2. Find the employee id's of employees certified for supervisor job in some project. 3. Find the names of employees who can work in projects with a budget greater than 3,000 but do not belong to grade 'X'.	[2+1+2]	3	3,4,6
Q.5(a)	Student(snum: integer, sname: string, major: string, level: string, age: integer) Class(name: string, meets at: string, room: string, fid: integer) Enrolled(snum: integer, cname: string) Faculty(fid: integer, fname: string, deptid: integer) Write queries in SQL for the following: 1. Find the age of the oldest student who is either a History major or enrolled in a course taught by I. Teach. 2. Find the names of all students who are enrolled in two classes that meet at the same time. 3. Find the names of faculty members for whom the combined enrollment of the courses that they teach is less than five.	[1+2+2]	3	3,4,6

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