

MCA.I/03.22.004

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MCA DEGREE FIRST SEMESTER EXAMINATION, FEBRUARY 2022**20-382-0104 DATA BASE MANAGEMENT SYSTEM****(Regular)****Time : 3 Hours****Maximum Marks:50**

Write any five questions.
(Each question carries 10 Marks)

Q.No		QUESTIONS	MARKS	CO	BL	PI
1.	(a)	Explain the 3 schema architecture of DBMS with a neat diagram.	5	CO1	L4	1.7.1
		Explain mapping cardinalities with suitable examples.	5	CO1	L2	1.6.1
2.	(a)	<p>Consider the following COMPANY database .</p> <p>EMP(Name,SSN,Salary,SuperSSN,Gender,Dno)</p> <p>DEPT(DNum,Dname,MgrSSN,Dno)</p> <p>DEPT_LOC(Dnum,Dlocation)</p> <p>DEPENDENT(ESSN,Dep_name,Sex)</p> <p>WORKS_ON(ESSN,Pno,Hours)</p> <p>PROJECT(Pname,Pnumber,Plocation,Dnum)</p> <p>Write the relational algebra queries for the following.</p> <p>I. Retrieve the name, address, salary of employees who work for the Research department.</p> <p>II. List female employees from Dno=20 earning more than 50000.</p> <p>III. Retrieve the SSN of all employees who either in department no :4 or directly supervise an employee who work in department number :4</p>	5	CO2	L3	1.7.1

	(b)	<p>Consider the following relation schema</p> <p>Works(Pname,Cname,salary)</p> <p>Lives(Pname,Street,City)</p> <p>located_in (Cname, city)</p> <p>Manager(Pname,Mgrname)</p> <p>Write the SQL queries for the following</p> <p>I. Find the names of all persons who live in the city Bangalore.</p> <p>II. Retrieve the names of all person of "TCS" whose salary is greater than Rs .40000</p> <p>III. Find the names of all persons who lives and work in the same city.</p> <p>IV. List the names of the people who work for "Tech M" along with the cities they live in.</p> <p>V. Find the average salary of "TCS" persons</p>	5	CO2	L3	1.7.1
3.	(a)	Describe the term data anomalies in DBMS.	3	CO3	L2	1.7.1
	(b)	Draw an ER diagram for a banking enterprise with all components and explain.	4	CO3	L5	1.7.1
	(c)	<p>Given a schedule S of four transactions T1, T2, T3, and T4. Check whether the given schedule is conflict serializable or not. If yes, then determine all the possible serial schedules.</p> <p>S: R4(A) R2(A) R3(A) W1(B) W2(A) R3(B) W2(B)</p>	3	CO5	L3	1.7.1
4.	(a).	Write a note on cursors. What are the advantages and disadvantages of cursor?	5	CO2	L2	1.6.1

	(b).	Consider the student table with attributes id: int, name:varchar(20), subj1:int, subj2:int, subj3:int, total:int, and percentage:float. Create a trigger in the student table in which whenever subject marks are entered, trigger will compute total and percentage and insert into the table together with the entered values.	5	CO2	L3	1.7.1
5.		Given a relation R(P, Q, R, S, T, U, V, W, X, Y) and Functional Dependency set $FD = \{ PQ \rightarrow R, P \rightarrow ST, Q \rightarrow U, U \rightarrow VW, \text{ and } S \rightarrow XY \}$, determine whether the given R is in 3NF? If not convert it into 3 NF.	5	CO4	L3	1.7.1
	(b)	What is deadlock? Explain how deadlock can be prevented.	5	CO5	L2	1.6.1
6.	(a)	Explain how database is stored on a hard disk	5	CO6	L2	1.6.1
	(b)	Write a short note on tree based indexing.	5	CO7	L2	1.6.1
7.	(a)	Explain how transparency can be achieved in distributed database.	5	CO8	L2	1.6.1
	(b)	Write a short note on Object Oriented databases.	5	CO8	L2	1.6.1
