Reg No.



MANIPAL INSTITUTE OF TECHNOLOGY

I SEMESTER M.TECH. (CSE & CSIS) END SEMESTER PROCTORED ONLINE EXAMINATIONS, FEBRUARY 2022 SUBJECT: ADVANCED DATABASE SYSTEMS [CSE 5153]

REVISED CREDIT SYSTEM 09/02/2022 [online]

TIME : 2.00 PM - 5.00 PM

Instructions to the Candidate

- Answer both Part A (30 Marks) and Part (20 Marks)
- Part B to be handwritten, scanned and upload on MS Teams
- Missing data may be suitable assumed.

PART-B: Descriptive Questions												
Time	Time: 2.20 PM - 3.45 PM Max. Marks:											
1A	Given relation PAY as in Figure 1, let p1: SAL < 30000 and p2: SAL \ge 3000 be two											
	simple predicates. Perform a horizontal fragmentation of PAY with respect to these											
	predicates to obtain PAY1, and PAY2. Using the fragmentation of PAY, perform further											
	derived horizontal fragmentation for EMP. Show completeness, reconstruction, and											
	disjointness of the fragmentation of EMP.											
	EMP ASG											
		ENO	ENAME	τιτι	.E	ENO	PNO	RESP	DUR			
		E1	J. Doe	Elect. I	Eng	E1	P1	Manager	12			
		E2	M. Smith	Syst. A	nal.	E2	P1	Analyst	24			
		E3	A. Lee	Mech.	Eng.	E2	P2	Analyst	6			
		E4	J. Miller	Progra	mmer	E3	P3	Consultant	10			
		E5	B. Casey	Syst. A	nal.	E3	P4	Engineer	48			
		E6	L. Chu B. Davis	Elect. I	Eng.	E4	P2	Programmer	18			
		E/	I. Jones	Svet A	eng.	E0 E6	P2 P4	Manager	24 48			
		Lo stories oyac Anal.				E7	P3	Engineer	36			
						E8	P3	Manager	40			
	PROJ PAY											
		PNO	PNAME		BUDGE	т		TITLE	SAL			
		P1	Instrumentation		150000			Elect. Eng.	40000			
		P2	Database Develop.		135000			Syst. Anal.	34000			
		P3	CAD/CAM		250000			Mech. Eng.	27000			
		P4	Maintenance	e	310000			Programmer	24000			
	Figure 1											
1B	Consider the application frequencies listed in Table 1. Calculate the Attribute Affinity											
	Matrix and Clustered Affinity Matrix? [Show all the steps]											

MAX.MARKS: 50 M

	Table 1									
	Acc ₁ (Q1)=15 Acc ₂ (Q1)=20 Acc ₃ (Q1)=10									
	$Acc_1(Q2)=5$ $Acc_2(Q2)=0$ $Acc_3(Q2)=0$									
	$Acc_1(Q3)=25$ $Acc_2(Q3)=25$ $Acc_3(Q3)=25$									
	$Acc_1(Q4)=3$ $Acc_2(Q4)=20$ $Acc_3(Q4)=0$	4M								
1C	We claimed that a scheduler which implements a strict concurrency control algorithm wi always be ready to commit a transaction when it receives the coordinator's "prepare									
	message. Prove this claim.									
2A	i) "A single query can also be thought of as a program that can be posed as a transaction."									
	Justify your answer.									
	ii) Compare and contrast the Centralized Transaction Execution with Distributed									
	Transaction Execution.									
2B	Imagine you are starting a new social networking site designed for NoSQL databa									
	developers. The goal is to support the NoSQL development community by providing a									
	platform for sharing tips, asking questions, and keeping in touch with others working on									
	similar problems. You make the suitable assumptions and Design a Social Network Graph									
	Database.	4M								
2C	'A 2PL implementation in a distributed system results in serializable schedules, but car									
	cause deadlocks'. Justify your answer with the example implementing distributed 2PL in									
	a four-site system.									

-ALL THE BEST-