

B.TECH(CSE), SEMESTER V SUPPLEMENTARY EXAMINATION, 2023
PAPER- BTCSE-502
DATABASE MANAGEMENT SYSTEM

Time: Three Hours

Maximum Marks: 75

Section-A

Answer ALL questions from this section (5 X 7= 35 marks)

Q.No	Questions	Marks	CO	BL
1.	Explain the three tier architecture of DBMS.	5	CO1	BL2
2.	Discuss the disadvantages of the traditional file based system	5	CO1	BL1
3.	Explain various Armstrong's Inference rule for Functional Dependencies	5	CO3	BL3
4.	What do you understand by aggregation and generalization in an E-R model.	5	CO2	BL2
5.	Develop an ER diagram using aggregation that captures the following information: Teacher teaches different subjects. Teacher teaching a particular subject uses a reference book. State any options you make.	5	CO2	BL6
6.	Distinguish between Physical Data Independence and Logical Data Independence. Which is more difficult to achieve? Justify your answer.	5	CO4	BL4
7.	For a relation R(A,B,C,D,E,F,G) and FD's { A → B, BC → DE, AEF → G}. Prove that ACF → DG.	5	CO3	BL5

Section-B

Answer any FOUR questions from this section (4 X 10= 40 marks)

Q.No	Questions	Marks	CO	BL
8.	Why do we need normalization? Explain the difference between 3NF & BCNF with example.	10	CO3	BL1
9.	Consider Schema: Customer (customer_name, customer_street, customer_city) Branch (branch_name, branch_city, assets) Account (account_number, branch_name, balance) Loan (loan_no, branch_name, amount) Depositor (customer_name, account_nummber) Borrower (customer_name, loan_number) Answer the following queries in Relational Algebra and SQL: (i) Find the loan numbers of the loans having amount more	10	CO2	BL3

	than 50000. (ii) Find names of the customers who have a loan from “Andheri” branch (iii) Find the names of the customers who have account but not loan. (iv) Find the names of the customers who have accounts at all branches located in Delhi. (v) Find the customer details who live in Mumbai.							
10.	Explain Full Outer Join, Left Outer Join & Right Outer Join with suitable example.	10	CO3	BL2				
11.	What do you mean by a transaction? What are the desired properties of transaction? Discuss the transaction state diagram and different states.	10	CO4	BL2				
12.	(a) What are the 3 conditions that determine if an action (A_1) from one transaction takes precedence over an action (A_2) in a different transaction? (b) Consider the following two transactions and schedule (time goes from top to bottom). Is this schedule conflict-serializable? Explain why or why not. <table border="1"> <thead> <tr> <th>Transaction T_0</th> <th>Transaction T_1</th> </tr> </thead> <tbody> <tr> <td> $r_0[A]$ $w_0[A]$ $r_0[B]$ $w_0[B]$ c_0 </td> <td> $r_1[A]$ $r_1[B]$ c_1 </td> </tr> </tbody> </table>	Transaction T_0	Transaction T_1	$r_0[A]$ $w_0[A]$ $r_0[B]$ $w_0[B]$ c_0	$r_1[A]$ $r_1[B]$ c_1	5+5	CO1	BL4
Transaction T_0	Transaction T_1							
$r_0[A]$ $w_0[A]$ $r_0[B]$ $w_0[B]$ c_0	$r_1[A]$ $r_1[B]$ c_1							
13.	Write short notes on any TWO: (a) DML & DDL (b) Database Anomalies (c) Role of DBA (d) B^+ Tree	5+5	CO4	BL2				
