

Paper Name : DATABASE MANAGEMENT SYSTEM
Time : 3 Hours **Maximum Marks** : 75
Paper Code : BTCSE MOOCS 3/BTCSE MOOCS 3 Lateral Entry /BTECE MOOCS3/BTECE MOOCS3 Lateral Entry

SECTION A

(35 Marks)

All questions are compulsory in this Section. All Questions are of 5 Marks.

Q.N.	Questions	Marks	CO	BL
1	Explain the characteristics of DBMS that distinguish it from a File Processing System.	7	CO1	L1
2	Explain the different types of Integrity constraints.	7	CO1	L1
3	Explain various Armstrong's Inference rule for Functional Dependencies	7	CO2	L2
4	Explain Functional Dependency. Also discuss Trivial & Non trivial FD's. For relation R{A,B,C,D,E,F,G}. FD's are given: A → B, BC → DE, AEF → G ; Prove that ACF → DG	7	CO3	L3
5	Explain the aggregation and generalization in an E-R model with suitable example.	7	CO3	L3

SECTION B

(40 marks)

Attempt **ANY FOUR** Questions from this Section.

All Questions are of 10 Marks.

Q.N.	Questions	Marks		
1	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 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	CO5	L4
2	Explain Normalization. Also discuss the need of normalization. Differentiate between 3NF and BCNF with suitable examples.	10	CO2	L3

3	(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><tr><th>Transaction T_0</th><th>Transaction T_1</th></tr><tr><td>$r_0[A]$</td><td></td></tr><tr><td>$w_0[A]$</td><td></td></tr><tr><td></td><td>$r_1[A]$</td></tr><tr><td></td><td>$r_1[B]$</td></tr><tr><td></td><td>c_1</td></tr><tr><td>$r_0[B]$</td><td></td></tr><tr><td>$w_0[B]$</td><td></td></tr><tr><td>c_0</td><td></td></tr></table>	Transaction T_0	Transaction T_1	$r_0[A]$		$w_0[A]$			$r_1[A]$		$r_1[B]$		c_1	$r_0[B]$		$w_0[B]$		c_0		10	CO2	L4
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4	Consider a B+-tree in which the maximum number of keys in a node is 5. Calculate the minimum number of keys in any non-root node?	10	CO3	L4																		
5	Explain Full Outer Join, Left Outer Join & Right Outer Join with suitable example.	10	CO2	L3																		
6	Write short notes on any two: a) Hashing Technique b) Role of DBA c) DML & DDL d) Database Anomalies	10	CO1	L3																		