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R-19

Code: 19DF21T

M.C.A. II Semester Supplementary Examinations February 2021

Database Management Systems

Max. Marks: 60

Time: 3 Hours

Answer all five units by choosing one question from each unit (5 x 12 = 60 Marks)

	Marks	CO	Blooms Level
UNIT-I			
1. a) Explain the main characteristics of the database approach versus file processing approach	6M	CO1	L1
b) Discuss with examples, different types of attributes.	6M	CO1	L2
OR			
2. a) What is the difference between specialization and generalization	6M	CO1	L2
b) Draw an ER diagram for a BANK database schema with at least five entity types. Also specify primary key and structural constraints.	6M	CO1	L3
UNIT-II			
3. Consider the following Schema Customer(cust_name, street, city) Loan(Loan_number, Branch_name, amount) Borrower(cust_name, Loan_number) and answer the below queries using domain relational calculus			
i. Find the loan number, branch, amount of loans of greater than or equal to 100 amount?			
ii. Find the loan number of each loan of an amount greater or equal to 150?			
iii. Find the names of all customers having a loan at the "MAIN" branch and find the loan amount?	12M	CO2	L3
OR			
4. Discuss the following relational algebra operations with suitable examples.			
i. Projection			
ii. Set Difference			
iii. Cartesian Product			
iv. Join Operations			
v. Union Operation	12M	CO2	L2
UNIT-III			
5. Write SQL Queries for following set of tables: EMPLOYEE (EmpNo, Name, DoB, Address, Gender, Salary, DNumber) DEPARTMENT (DNumber, Dname, ManagerEmpNo, MnagerStartDate).			
i) Display the Age of 'male' employees.			
ii) Display all employees in Department named 'Marketing'.			
iii) Display the name of highest salary paid 'female' employee.			
iv) Which employee is oldest manger in company?			
v) Display the name of department of the employee 'SMITH'.	12M	CO3	L3

OR

6. a) Discuss the problems caused by redundancy and the purpose of normalization. 6M CO4 L2
 b) Give relation schemas for the following normal forms
 i) 2NF but not in 3NF
 ii) 3NF but not in BCNF 6M CO3 L3

UNIT-IV

7. a Does two phase locking protocol ensure conflict serializability? Justify your answer with appropriate examples. 6M CO4 L1
 b List and explain various issues while transactions are running concurrently in DBMS. 6M CO4 L1

OR

8. a Explain concurrency control with locking methods. 6M CO4 L1
 b What is database Recovery? Explain shadow paging in detail. 6M CO4 L1

UNIT-V

9. a Discuss how multi-level indexes are constructed using B trees and B+ trees? Explain. 6M CO5 L1
 B Make a comparison of hash file organization with heap file organization. 6M CO5 L2

OR

10. a What is static hashing? What rules are followed for index selection? 6M CO5 L1
 b Demonstrate bulk loading of B+ tree of order 3 with the following data (key*)
 56*, 32*, 18*, 72*, 45*, 16*, 98*, 83*, 81*, 27*, 39*, 51*, 66*, 44*, 33*, 22* 6M CO5 L3

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R-19

Code: 19DF23T

M.C.A. II Semester Supplementary Examinations February 2021

Data Structures

Max. Marks: 60

Time: 3 Hours

Answer all five units by choosing one question from each unit (5 x 12 = 60 Marks)

		Marks	CO	Blooms Level
UNIT-I				
1.	a) List out the types of Data Structures. Discuss the properties and applications of them.	7M	CO1	L2
	b) Illustrate the mathematical analysis of recursive and non-recursive algorithms.	7M	CO1	L3
OR				
2.	a) What does Asymptotic analysis mean? Describe three basic asymptotic notations?	7M	CO1	L2
	b) Explain the need of analyzing an algorithm.	7M	CO1	
UNIT-II				
3.	Demonstrate different operations that can be done on a single linked list.	14M	CO2	L3
OR				
4.	a) Define Stack. Discuss about the stack operations with an example.	7M	CO2	L2
	b) Apply stack operations for evaluating postfix expression with the help of an algorithm.	7M	CO2	L3
UNIT-III				
5.	Write an algorithm for merge sort and illustrate it with an example.	14M	CO1	L2
OR				
6.	a) Compare and contrast Linear search and Binary search.	7M	CO4	L2
	b) Define a Heap. Analyze and choose the best one among heap sort and merge sort algorithms.	7M	CO5	L4
UNIT-IV				
7.	a) Give the properties of Binary tree. Demonstrate Topological sorting algorithm with an example	7M	CO3	L3
	b) Draw a diagram to show how the values are inserted into a hash table that uses the hash function key % 10 to determine into which of ten chains to place the value.(Chaining Hash table)			
	67, 46, 88, 91, 123, 141, 152, 155, 178, 288, 390, 399, 465, 572, 621, 734	7M	CO3	L3
OR				
8.	Write and explain algorithms for three Binary tree traversals	14M	CO4	L2
UNIT-V				
9.	a) What is a graph? Describe the properties and operations of Graph data structure.	7M	CO3	L2
	b) Explain the properties and operations of Binary search tree.	7M	CO3	L1
OR				
10.	How the height of tree is calculated? Demonstrate different rotations applied to balance the height in AVL trees.	14M	CO3	L3
