Reg. No. :

Question Paper Code: U3F06

B.E./B.Tech. DEGREE EXAMINATION, NOV 2023

Third Semester

Computer science Engineering

21UCD306- DATABASE SYSTEM DESIGN

(Common to IT,CSD, AI&DS & CSE (AI&ML))

(Regulations 2021)
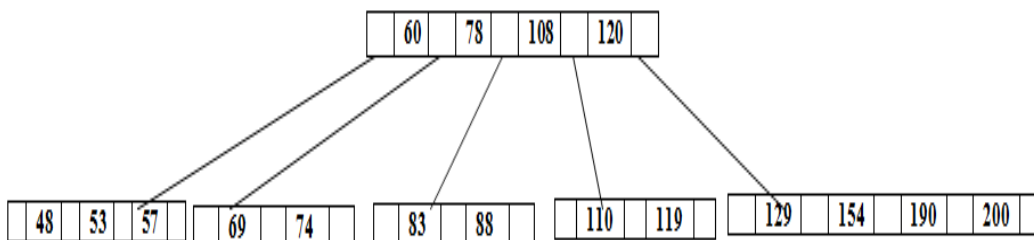
Duration: Three hours   Maximum: 100 Marks

Answer All Questions

PART A - (10x 2 = 20 Marks)

1. State the functions of Database Administrator (DBA).   CO1- U

2. Describe the three levels of views used in DBMS.   CO1- U

3. Explain the types of joins in SQL.   CO1- U

4. Consider the following relation: CO2- App

    Customer (Custid, Custname, Age, phno)

    Loan (Loanid, Amount, Custid, EMI)

    a) Display Customerids who have not taken Loan.
    b) List of the customerids and total Loan amount taken

5. Explain two types of two-phase locking protocols.   CO1- U

6   Define a schedule. What are the different types of Schedule?   CO1- U

7   What is meant by query optimization?   CO1- U

8   Insert the value 195 into the B+ tree of order 5 shown in the following figure.   CO2- App

9   How to choose between non-relational (NoSQL) and relational (SQL) CO3- Ana
    databases? Justify.

10 List the different types of NoSQL databases.   CO1- U

PART – B (5 x 16= 80 Marks)

11. (a) Explain in detail about the database architecture with suitable CO1- U   (16)
         diagram.

                                    Or

    (b) Write notes on join. How join can be expressed with basic relational CO1- U   (16)
         algebra operators? Justify with example.

12. (a) What is Normalization? Explain 1NF, 2NF, 3NF and BCNF with CO1- U   (16)
         suitable example.

                                    Or

    (b) Define a functional dependency. List and discuss the six inference CO1- U   (16)
         rules for functional dependencies. Give relevant examples.

13. (a) Describe the concept of serializability with suitable examples.   CO1- U   (16)

                                    Or

    (b) Explain Timestamp based concurrency control algorithm with an CO1- U   (16)
         example.

14. (a) With simple algorithms explain the concepts of Nested-loop join and CO1- U   (16)
         Block Nested-loop join.

                                    Or

    (b) Explain about B trees indexing concept with an example.   CO1- U   (16)

15. (a) Explain in detail about the different types of NoSQL databases with CO1- U   (16)
         suitable example.

                                    Or

    (b) Explain in detail about Mongodb architecture with CURD CO1- U   (16)
         operations.

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