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Question Paper Code:R3F06

B.E./B.Tech. DEGREE EXAMINATION, NOV 2025

Third Semester

R21UCD306 – DATA BASE SYSTEM DESIGN

Computer Science and Design

(Regulations R2021)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. Explain the components of the storage manager. CO1-U
2. List out the Primary key constraints. CO1-U
3. State the differences between BCNF and 3NF. CO1-U
4. Explain the types of joins in SQL? CO1-U
5. Describe ACID properties. CO1-U
6. What is meant by Deadlock. CO1-U
7. What is indexing and what are the different kinds of indexing? CO1-U
8. Explain nested loop join? What is meant by block nested loop join? CO1-U
9. What are the differences between SQL and NoSQL databases? CO1-U
10. What is Cassandra database? CO1-U

PART – B (5 x 16= 80 Marks)

11. (a) With relevant examples discuss the various fundamental operations in Relational Algebra. CO1-U (16)
- Or
- (b) Define relational database and explain the function of relational database. CO1-U (16)
12. (a) What is Normalization? Explain 1NF, 2NF, 3NF and BCNF with suitable example. CO1-U (16)

Or

- (b) Write short notes on Aggregate functions and Joins in SQL with example. CO1-U (16)
13. (a) Write notes on transaction and its states with example. Explain ACID properties. CO1-U (16)
- Or
- (b) Explain Concurrency control with suitable example and explain. CO1-U (16)
14. (a) Describe the different types of file organization with their advantages and disadvantages. CO1-U (16)
- Or
- (b) Explain static hashing and dynamic hashing in detail. CO1-U (16)
15. (a) Explain in detail about the different types of NoSQL databases with suitable example. CO1-U (16)
- Or
- (b) Explain CQL in detail with an example. CO1-U (16)