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Question Paper Code:U3F06

B.E./B.Tech. DEGREE EXAMINATION, NOV 2024

Third Semester

Computer science Engineering

21UCD306- Database System Design

(Common to IT,CSD & AI&DS)

(Regulations 2021)

Duration: Three hours

Maximum: 100 Marks

Answer All Questions

PART A - (10x 2 = 20 Marks)

1. Explain the components of the storage manager. CO1- U
2. Explain the different types of attributes with example. CO1- U
3. State the differences between BCNF and 3NF. CO1- U
4. Explain about Functional Dependency. CO1- U
5. How does Pipelining improve query evaluation efficiency? Explain CO1- U
6. What is meant by log based recovery? CO1- U
7. What is indexing and what are the different kinds of indexing? CO1- U
8. What are the properties of B trees? CO1- U
9. What are the differences between SQL and NoSQL databases? CO1- U
10. What are the features of NoSQL? CO1- U

PART – B (5 x 16= 80Marks)

11. (a) With relevant examples discuss the various fundamental operations in Relational Algebra. CO1-U (16)
- Or
- (b) (i) Explain various keys with examples CO1-U (8)
- (ii) Explain the disadvantages of using file processing systems. CO1-U (8)

12. (a) What is Normalization? Explain 1NF, 2NF, 3NF and BCNF with suitable example. CO1-U (16)
- Or
- (b) Define a functional dependency. List and discuss the six inference rules for functional dependencies. Give relevant examples. CO1-U (16)
13. (a) Describe the concept of serializability with suitable examples. CO1-U (16)
- Or
- (b) Explain Timestamp based concurrency control algorithm with an example. CO1-U (16)
14. (a) With simple algorithms explain the concepts of Nested-loop join and Block Nested-loop join. CO1-U (16)
- Or
- (b) Explain about B trees indexing concept with an example. CO1-U (16)
15. (a) Explain detail about the Cassandra NoSQL databases with neat diagram. CO1- U (16)
- Or
- (b) Explain in detail about MongoDB architecture with CRUD operations. CO1- U (16)