

UNIT-III: SQL

- 1) Write the syntax of basic SQL query. Explain briefly about selection and projection in SQL 5 M
- 2) Explain Aggregate functions with each one example. 5 M
- 3) Describe the implementation of key and integrity constraints 5 M
- 4) Discuss GROUPBY and HAVING clauses with an example. Also give the constraints related to their usage. 5 M
- 5) What is a View? How to create a View? Discuss in detail about Updatable & Non-Updatable Views. 5 M
- 6) What are the Relational SET operations in SQL. Exemplify using queries. 5 M
- 7) How to create tables with relationship? Establish a relationship between two tables using primary key and foreign key. 5 M
- 8) How would you use the operators IN, EXISTS, UNIQUE, ANY and ALL in writing nested queries? Why are they useful? Explain with an example. 5 M
- 9) Explain Arithmetic and Logical Operators with examples 5 M
- 10) Why we need joins? Explain different types of joins with examples. 5 M
- 11) Write in detail about SQL functions(Date and Time, Numeric, String conversion). 10 M

UNIT-IV: SCHEMA REFINEMENT

- 1) State and explain Third normal form with an example. 5 M
- 2) Explain dependency preserving decomposition with examples 5 M
- 3) Discuss about “the concept of surrogate” key with example 5 M
- 4) Define BCNF. How does BCNF differ from 3NF? Explain with an example 5 M
- 5) What is the purpose of Schema Refinement? 3 M
- 6) Explain about Lossless join and Lossy join decomposition with examples 7 M
- 7) What is Normal Form? What are the differences between 1NF, 2NF, 3NF? 5 M
- 8) Define Functional Dependency? Explain trivial, non-trivial, multi valued dependency 5 M
- 9) Define MVD. Explain 4NF in detail. 5 M
- 10) Write the properties of functional dependencies. 5 M
- 11) Explain BCNF and 5NF with examples 5 M
- 12) What are the advantages of normalized relations over the un-normalized relations? 5 M

UNIT-V: TRANSACTION, INDEXING

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| 1) Explain in detail about Serializability & Recoverability | 5 M |
| 2) Explain ARIES Recovery Algorithm | 5 M |
| 3) Explain the need of commit, rollback and save point operations in transaction management. | 5 M |
| 4) Write about Operations on B+ tree with examples | 5 M |
| 5) Explain Concurrent Execution in detail | 5 M |
| 6) Discuss briefly about primary and secondary indexes? Explain their role in indexing the tables with suitable example. | 5 M |
| 7) How to use hash-based indexing? Explain briefly and differentiate it from other indexing mechanisms. | 7 M |
| 8) Discuss Transaction States with a diagram | 3 M |
| 9) Explain the concept of deadlock and dead lock prevention policies with an example | 5 M |
| 10) Define locking protocol. Describe the Strict Two-Phase Locking protocol with an example. | 5 M |
| 11) Discuss Implementation of Isolation | 5 M |
| 12) How to handle bucket overflow in hash-based indexing mechanism? Explain | 5 M |

SHORT ANSWER QUESTIONS

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| 1) What is the difference between nested query and correlated sub query. | 2 M |
| 2) What is functional dependency? Write its types. | 2 M |
| 3) What property of decomposition is guaranteed by both BCNF and 3NF? | 2 M |
| 4) Why we need Triggers in a database? | 2 M |
| 5) What is the Having clause in SQL query? | 2 M |
| 6) Define ACID properties of a transaction. | 2 M |
| 7) What is the main purpose of finding the closure of a functional dependency? | 2 M |
| 8) Write a SQL query on EXCEPT operation. | 2 M |
| 9) Write the differences between nested and correlated query. | 2 M |
| 10) What are Concurrency protocols. | 2 M |
| 11) List out various data structures used for indexing purposes in database. | 2 M |
| 12) Is secondary index a dense index or sparse index? Justify your answer. | 2 M |
| 13) Is primary index a dense index or sparse index? Justify your answer. | 2 M |
| 14) Define deadlock. | 2 M |
| 15) What is hash-based indexing in DBMS? | 2 M |
