



CBCS SCHEME

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21CS745

Seventh Semester B.E./B.Tech. Degree Examination, June/July 2026 NOSQL Database

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. What are major advantages of RDBMS that makes them valuable? Explain impedance mismatch problem with example. (10 Marks)
- b. Explain the scenario of the attack of the clusters. Enlist various key features of NOSQL. (10 Marks)

OR

- 2 a. Explain with examples consequences of aggregate orientation for RDBMS and NOSQL. (10 Marks)
- b. Explain the concepts of schemaless databases and materialized views in NOSQL. (10 Marks)

Module-2

- 3 a. Explain with block diagrams and examples, the working of sharding and master-slave replication. (10 Marks)
- b. With examples, describe the concepts and mechanisms of update and read consistency. (10 Marks)

OR

- 4 a. With a set diagram, explain the working of CAP theorem with its relevance. (10 Marks)
- b. Explain the following terms: Quorums, version stamps on multiple nodes, business and system transactions. (10 Marks)

Module-3

- 5 a. Explain the map-reduce working for the following scenarios:
 - i) Read from DB and emit key-value pairs
 - ii) Combine several key-value pair coin same key and aggregate. (10 Marks)
- b. Explain with examples two-stage map-reduce and incremental map-reduce. (10 Marks)

OR

- 6 a. Explain the various features of key-value databases. (10 Marks)
- b. With example code snippet (python/java) write CRUD operation APIs with Riak. (10 Marks)

Module-4

- 7 a. Explain the various CRUD operation APIs of Mongo DB to interact with documents. (10 Marks)
- b. With a block diagram, explain replica set configuration in MongoDB. (10 Marks)

OR

- 8 a. Explain the scaling mechanism supported in MongoDB. (10 Marks)
- b. Discuss the various use case for applying document oriented databases and problem spaces where they should not be used. (10 Marks)

Module-5

- 9 a. Define Graph Database with an example Graph structure. Write Neo4J code to create graph. (10 Marks)
- b. Explain the various ways of querying graph databases with example Neo4J code. (10 Marks)

OR

- 10 a. Explain scaling of Graph databases with block diagram for application level sharding of nodes. (10 Marks)
- b. Describe the various use case for applying graph databases and problem scenarios where they should not be used. (10 Marks)

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