CBCS SCHEME

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21CS745

Seventh Semester B.E./B.Tech. Degree Examination, Dec.2025/Jan.2026
NoSQL Database

Time: 3 hrs. Max. Marks: 100

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

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

Module-1

1 a. Compare NoSQL with RDBMS. Explain the value of Relational databases. **(08 Marks)**
b. Describe Impedance mismatch with a neat diagram. **(06 Marks)**
c. Explain the factors contributing to the emergence of NoSQL databases. **(06 Marks)**

OR

2 a. What are Materialized views? Explain. **(06 Marks)**
b. Explain Aggregate data model with a neat diagram, considering examples of Relations and Aggregates. **(08 Marks)**
c. Describe the attack of the clusters and disadvantages of clusters. **(06 Marks)**

Module-2

3 a. Explain Master – Slave and Peer – to – peer replication with neat diagrams. Compare their strengths and weaknesses for fault tolerance and scalability. **(10 Marks)**
b. Explain Write – Write consistency and read – write consistency with the help of a suitable example. What is the role of Quorum in maintaining consistency? **(10 Marks)**

OR

4 a. What is a Version Stamp? What are the ways to create Version Stamps? Explain how version stamps are applied in different nodes. **(10 Marks)**
b. What are Distribution Models? Explain the two methods of data distribution. **(10 Marks)**

Module-3

5 a. Explain basic Map Reduce with neat diagram. **(06 Marks)**
b. Explain with a neat diagram, the partitioning and combining in Map Reduce. **(10 Marks)**
c. What are key value stores? List out few popular key value databases. **(04 Marks)**

OR

6 a. Explain 2 – stage Map – Reduce considering the example to compare the sales of products for each month in 2011 to the prior year. **(10 Marks)**
b. Explain how data is stored in buckets of key value data store. Explain the features and suitable usecases of key value data stores. **(10 Marks)**

Module-4

7 a. What is a Document database? Give examples of any document that can be stored into it and explain. **(06 Marks)**
b. Explain Consistency and availability in MongoDB with neat diagram for configuration of replica sets. **(08 Marks)**
c. List and explain briefly the applications of document databases. **(06 Marks)**

OR

8 a. Explain Scaling and Sharding in document databases with a neat diagram. **(10 Marks)**
b. List the use cases of document databases and also problem spaces where document databases are not a best solution. **(04 Marks)**
c. Explain the Query features of document database. **(06 Marks)**

Module-5

9 a. What is a Graph database? Explain with example of graph structure. List out various graph databases available. **(10 Marks)**
b. Explain in detail the three ways in which graph databases can be scaled. What is the best method out of three? **(10 Marks)**

OR

10 a. What is Neo4j graph database? List out and explain its features. Explain the procedure to add indexing for the nodes in the Neo4j database. **(08 Marks)**
b. List out use cases of Graph database. **(06 Marks)**
c. Describe Consistency , Transactions and Availability with respect to graph databases. **(06 Marks)**

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