

Code No: R204142F

R20

SET - 1

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY GURAJADA VIZIANAGARAM**  
**IV B. Tech I Semester Advanced Supplementary Examinations March 2025**

**NOSQL DATABASES**

(AI&DS, AI&ML, CSE(AI), CSE(DS), CSE(AI&ML) and CSE-(AI&DS))

Time: 3 hours

Max. Marks: 70

Answer any **FIVE** Questions **ONE** Question from **Each unit**  
All Questions Carry Equal Marks

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**UNIT-I**

1. a) Explain about aggregate Data Models with neat diagram and relevant examples. [7M]  
Consider examples of Relations and Aggregates.  
b) Describe the concept of Impedance mismatch with neat diagram? [7M]  
(OR)
2. a) Explain NoSQL and describe the four types of NoSQL database. [7M]  
b) Discuss Document Database with an example. Consider an use case and explain advantages of Document database. [7M]

**UNIT-II**

3. a) Explain Replication and Sharding in detail with various styles of distributing the data. [7M]  
b) Define Master-Slave replication. With a neat diagram, explain the advantages and disadvantages of master-slave replication. [7M]  
(OR)
4. a) Explain the following [7M]
  - i. Relaxing consistency
  - ii. Relaxing Durability
  - iii. CAP Theorem.
  - iv. Quorums.  
b) In a distributed inventory system, the product "Laptop" has the following details: [7M]  
Price: ₹60,000, Stock: 10, Version Stamp: v1.  
Example: User A updates the Price to ₹50000, and User B updates it to ₹45000 at the same time. For this example, how can different version stamping methods be applied to track these updates, and what are the advantages and disadvantages of each method?

**UNIT-III**

5. a) What are key-value stores and popular key-value databases? Discuss with an example how data is organized within a single bucket and mention ways to handle key conflicts. [7M]  
b) Describe instances when the Key value database and document based are to be used and when to be avoided? [7M]  
(OR)
6. a) Give a comparative study of RDBMS over Key-Value Store and Document based database? [7M]  
b) Explain the features of Key-value stores in detail. [7M]

**UNIT-IV**

7. a) Explain with an example about Document Databases. [7M]  
b) List and explain the suitable use cases for document databases. [7M]

(OR)

8. a) Briefly explain the scaling feature in document databases with a neat diagram. [7M]  
b) Explain a few applications where document databases should not be used. [7M]

**UNIT-V**

9. a) What is a graph database? Explain how relationships and properties are represented in a graph, with a neat diagram. [7M]  
b) Explain transaction, consistency and availability with respect to graph databases. [7M]

(OR)

10. a) Discuss the three scaling methods in graph databases with a clear diagram. [7M]  
b) With an example graph structure, discuss how relationships are handled in a graph database compared to an RDBMS [7M]

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