

KAMARAJ COLLEGE (Autonomous)

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(Affiliated to Manonmaniam Sundaranar University, Tirunelveli)

(3 Pages)

Reg. No:.....

Question Code: 26E03208

Course Code : 25PEAI24

PG Degree - End Semester Examinations, April 2026

Second Semester

M.Sc., COMPUTER SCIENCE WITH AI

Database for Data Science

(For those who joined in June 2025 onwards)

Time : 3 Hours

Maximum : 75 Marks

PART - A (10 × 1 = 10 Marks)

Answer ALL Questions

Choose the correct answer :

- CO:1
K:2
1. Which component of a database system is responsible for defining the structure of data?
- (a) Database schema (b) Query processor
(c) Database users (d) Transaction manager
- CO:1
K:2
2. Show the symbol that is used to represent a relationship in an ER diagram.
- (a) Rectangle (b) Diamond
(c) Ellipse (d) Line
- CO:2
K:2
3. Relate the normal form that eliminates partial dependency.
- (a) 1NF (b) 3NF
(c) 2NF (d) BCNF
- CO:2
K:2
4. Which command is used to permanently remove a table from a database?
- (a) DELETE (b) TRUNCATE
(c) REMOVE (d) DROP
- CO:3
K:2
5. Which NoSQL database type is best suited for representing highly connected data such as recommendation engines?
- (a) Graph database (b) Column-family store
(c) Document store (d) Key-Value store

- CO:3
K:1 6. Choose the NoSQL database type is best suited for handling relationships such as social networks.
- (a) Column-family database (b) Graph database
- (c) Key-Value database (d) Document database
- CO:4
K:1 7. Which of the following applications benefits most from MongoDB's flexible document structure?
- (a) Payroll systems (b) Legacy mainframe applications
- (c) Blogging and content management systems (d) Single-user desktop databases
- CO:4
K:1 8. Select the MongoDB feature that helps ensure data consistency and atomicity for multiple operations.
- (a) Sharding (b) Replication
- (c) MapReduce (d) Multi-document transactions
- CO:5
K:1 9. Apache HBase is built on top of which distributed storage system?
- (a) Hadoop Distributed File System (HDFS) (b) Google File System
- (c) Amazon S3 (d) Local file system
- CO:5
K:1 10. In HBase architecture, which component manages region assignment and load balancing?
- (a) DataNode (b) HMaster
- (c) ZooKeeper (d) RegionServer

PART - B (5 X 5 = 25 Marks)

Answer ALL Questions choosing either (a) or (b).

Answer should not exceed 250 words.

- CO:1
K:4 11. (a) Examine the architecture of DBMSs Conceptual Data Model.
- (OR)**
- (b) Inspect the elements of database systems.
- CO:2
K:4 12. (a) Distinguish between SQL Data Definition Language and SQL Data Manipulation Language.
- (OR)**
- (b) Survey the techniques used to relational model for relational databases.
- CO:3 13. (a) Identify the significance of Data Warehouse Schemas.

K:3

(OR)

(b) Organize the potential challenges of Business Intelligence.

CO:4 14. (a) Analyze the dimensions and components of E-Commerce Applications.
K:4

(OR)

(b) Classify the various features of Document oriented Database.

CO:5 15. (a) Make use of the Column oriented NoSQL databases using Apache.
K:3

(OR)

(b) Identify the features of Column Family Datastore in NoSQL.

PART - C (5 X 8 = 40 Marks)

Answer ALL Questions choosing either (a) or (b).

Answer should not exceed 600 words.

CO:1 16. (a) Analyze the Entity- Relationship Model with example.
K:4

(OR)

(b) Examine the UML Class Diagram Phases of Database Design.

CO:2 17. (a) Estimate the importance of Normalization in relational database.
K:5

(OR)

b. Explain the various types of Database Systems.

CO:3 18. (a) Demonstrate the use of Virtual Data Warehouses and Virtual Data Marts.
K:3

(OR)

(b) Analyse the various types of NoSQL Database.

CO:4 19. (a) Assess the significance of Content Management Systems in NoSQL.
K:5

(OR)

(b) Determine the technologies involved in Blogging Platforms.

CO:5 20. (a) Discuss the Architecture of HBASE.
K:6

(OR)

(b) Elaborate the Query Features in NoSQL.