Register No : _____

# THE KAVERY ENGINEERING COLLEGE

***(An Autonomous Institution)***

**MCA DEGREE END SEMESTER THEORY EXAMINATIONS, APRIL-MAY 2025**

***Second Semester***

***Master of Computer Applications***

**MC4202 / PMCT2422 - Advanced Database Technology**

***Regulations – 2021/2024***

***Duration : 3 Hrs*** ***Maximum : 100 Marks***

***PART – A (ANSWER ALL QUESTIONS) (Marks 10*2=20)***

| *Q.No* | *Questions* | *BLT* | *CO* | *Marks* |
|---|---|---|---|---|
| 1. | State any two features of distributed database. | L1 | 1 | 2 |
| 2. | Define "commit protocols" in the context of distributed transactions. | L1 | 1 | 2 |
| 3. | List the key spatial data types used in spatial databases. | L1 | 2 | 2 |
| 4. | What is the significance of location and handoff management in mobile databases? | L2 | 2 | 2 |
| 5. | List the basic operations that can be performed in MongoDB | L1 | 3 | 2 |
| 6. | What distinguishes OrientDB as a graph database compared to other NoSQL databases? | L2 | 3 | 2 |
| 7. | How does a Document Type Definition (DTD) help in validating XML documents? | L2 | 4 | 2 |
| 8. | How does an inverted index improve the efficiency of text retrieval in large databases? | L2 | 4 | 2 |
| 9. | What are some common steps involved in text preprocessing? | L1 | 5 | 2 |
| 10. | How does tokenization affect the performance of search engines? | L2 | 5 | 2 |

***PART – B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)***

| *Q.No* | | *Questions* | *BLT* | *CO* | *Marks* |
|---|---|---|---|---|---|
| 11. | a | Explain with a neat diagram the architecture of distributed databases also mentions its uses. | L2 | 1 | 16 |
| | | **Or** | | | |
| | b | Interpret the concept of concurrency control in distributed database and why it is important for maintaining data consistency? | L2 | 1 | 16 |

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|---|---|---|---|---|---|---|
| 12. | a | i | How would you design a temporal query to retrieve data within a specific time range from a temporal database? | L3 | 2 | 08 |
| | | ii | Given a scenario where a spatial database needs to store information about the location of various vehicles, how would you use spatial data types to store this data? | L3 | 2 | 08 |
| | | | **Or** | | | |
| | | ii | Identify the issues associated with location management in mobile databases, especially in the context of handoffs between different network zones. | L3 | 2 | 16 |
| 13. | a | | Apply various MongoDB Operations such as insert, update, delete and query to manage data in a collection for an E-Commerce site. | L3 | 3 | 16 |
| | | | **Or** | | | |
| | b | i | Identify the challenges of managing large amounts of data with sharing in Cassandra? | L3 | 3 | 08 |
| | | ii | How do you optimize queries in Cassandra to avoid inefficient scans and improve performance? | L3 | 3 | 08 |
| 14. | a | i | Compare and contrast the difference between structured, semi-structured, and unstructured data. | L2 | 4 | 08 |
| | | ii | How XML are processed and stored in web database? Explain with an example. | L2 | 4 | 08 |
| | | | **Or** | | | |
| | b | i | Explain the relationship between XQuery and XPath. | L2 | 4 | 08 |
| | | ii | How can you use XQuery to modify or restructure the data retrieved from an XML document? | L2 | 4 | 08 |
| 15. | a | | Break down the process of text preprocessing into its key steps and explain why each is necessary for effective information retrieval. | L3 | 5 | 16 |
| | | | **Or** | | | |
| | b | | Design an information retrieval system for a digital library, incorporating a retrieval model, inverted indexing, and text preprocessing techniques. Specify how you would evaluate its performance. | L3 | 5 | 16 |