

THE KAVERY ENGINEERING COLLEGE
(An Autonomous Institution)

MCA DEGREE END SEMESTER THEORY EXAMINATIONS, NOV/DEC 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)

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
1.	Specify the key characteristics of distributed systems.	L2	1	2
2.	Associate the ACID properties in the context of distributed transactions.	L3	1	2
3.	Find the differences among valid time, transaction time and bitemporal data in temporal databases.	L3	2	2
4.	Identify the role of logical inference in deductive databases.	L3	2	2
5.	Give the primary differences between NoSQL and relational databases.	L2	3	2
6.	Mention the significances of nodes and edges in OrientDB's graph database model.	L2	3	2
7.	Examine the benefits and limitations of the hierarchical data model in XML databases.	L4	4	2
8.	Provide the main components of a XQuery expression and their functions.	L2	4	2
9.	Relate the term information retrieval and data retrieval.	L2	5	2
10.	In what way retrieval models important in IR systems?	L2	5	2

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

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
11.	a Compare and contrast centralized and distributed systems. Assess the advantages and disadvantages of each.	L2	1	16
	Or			
	b i Identify the concept of deadlock in distributed databases and strategies to prevent it using concurrency control.	L2	1	8
	ii Elaborate the various stages involved in distributed query processing.	L2	1	8
12.	a Infer the role of temporal queries, and how do they differ from standard SQL queries?	L2	2	16
	Or			
	b Explain any four real-world applications of spatial databases with geographic information systems.	L2	2	16
13.	a Assess how different types of NoSQL databases align with CAP theorem principles in detailed.	L4	3	16

Or

	b	i	Estimate any four DML querying methods in MongoDB for a suitable real time use cases.	L4	3	8
		ii	Determine the process of creating and managing databases in Hive to improve the query performance.	L4	3	8
14.	a		Provide examples of applications that typically handle each type of data in structured, semi-structured, and unstructured.	L3	4	16
			Or			
	b		Construct a sample code using XPath to retrieve specific elements and attributes from an XML document.	L3	4	16
15.	a		Discuss the concept of query expansion and its role in improving retrieval performance.	L2	5	16
			Or			
	b		Illustrate the procedure for constructing a collection of documents using inverted indexing techniques in the information retrieval.	L2	5	16