Paper ID : 250344

Roll No: | | | | | | | | | | | | | |

MCA
(SEM IV) THEORY EXAMINATION 2024-25
DISTRIBUTED DATABASE SYSTEMS

TIME: 3 HRS **M.MARKS: 100**

Note: Attempt all Sections. In case of any missing data; choose suitably.

SECTION A

1. Attempt *all* questions in brief. **2 x 10 = 20**

Q No.	Question	CO	Level
a.	What are the main promises and challenges of distributed DBMS?	CO1	K2
b.	Define fragmentation and explain its types with examples.	CO1	K2
c.	What are the main objectives of distributed query processing?	CO2	K3
d.	Describe the concept of query localization in distributed systems.	CO2	K3
e.	What is serializability in distributed transaction management?	CO3	K4
f.	Explain optimistic concurrency control with an example.	CO3	K4
g.	What do you understand by fault tolerance in distributed systems?	CO4	K3
h.	Mention key causes of failures in distributed databases.	CO4	K3
i.	Define object identity and inheritance in object-oriented DBMS.	CO5	K5
j.	What are persistent programming languages? Give two examples.	CO5	K5

SECTION B

2. Attempt any *three* of the following: **10 x 3 = 30**

Q No.	Question	CO	Level
a.	Explain the architectural models of distributed DBMS with neat diagrams.	CO1	K2
b.	Describe distributed query optimization algorithms in detail.	CO2	K3
c.	Explain concurrency control algorithms and how deadlocks are managed in distributed DBMS.	CO3	K4
d.	Discuss various fault types and reliability protocols used in distributed DBMS.	CO4	K3
e.	Differentiate between OODBMS and ORDBMS with suitable examples.	CO5	K5

SECTION C

3. Attempt any *one* part of the following: **10 x 1 = 10**

Q No.	Question	CO	Level
a.	Explain alternative design strategies in distributed database design.	CO1	K2
b.	Describe the steps and issues involved in data allocation in a distributed system.	CO1	K2

4. Attempt any *one* part of the following: **10 x 1 = 10**

Q No.	Question	CO	Level
a.	Explain in detail the layers of query processing and decomposition.	CO2	K3
b.	Compare centralized and distributed query optimization approaches with examples.	CO2	K3

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5. Attempt any *one* part of the following: 10 x 1 = 10

Q No.	Question	CO	Level
a.	Discuss different types of transactions and their properties in DDBMS.	CO3	K4
b.	Explain timestamp ordering and optimistic concurrency control mechanisms.	CO3	K4

6. Attempt any *one* part of the following: 10 x 1 = 10

Q No.	Question	CO	Level
a.	Explain local and distributed reliability protocols with appropriate examples.	CO4	K3
b.	Discuss parallel database system architectures and the need for load balancing.	CO4	K3

7. Attempt any *one* part of the following: 10 x 1 = 10

Q No.	Question	CO	Level
a.	Explain the object-oriented data model with a focus on object identity and inheritance.	CO5	K5
b.	Describe distributed object query processing and object storage mechanisms.	CO5	K5