PAPER ID-420209

Subject Code: KCA045

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

MCA
(SEM IV) THEORY EXAMINATION 2021-22
DISTRIBUTED DATABASE SYSTEMS

Time: 3 Hours *Total Marks: 100*

Note: Attempt all Sections. If you require any missing data, then choose suitably.

SECTION A

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

Qno	Questions	CO
(a)	Why distributed databases are essential?	1
(b)	What is transaction log? What are its functions?	2
(c)	Explain view serializability.	2
(d)	How does the concept of an object in object-oriented model differ from the concept of an entity in the ER diagram?	5
(e)	Define the concepts of recoverable, cascade less and strict schedules.	4
(f)	Explain briefly in what way designing an object-oriented database is different from relational database.	3
(g)	Define Moss Concurrency protocol?	2
(h)	Differentiate between Backward and Forward recovery.	4
(i)	Differentiate between 2PL and strict 2PL.	2
(j)	What are the types of failures in distributed DBMS?	4

SECTION B

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

Qno	Questions	CO
(a)	Why is recovery in a distributed DBMS more complicated than in centralized system?	1
(b)	Compare Distributed Deadlock prevention to Distributed Deadlock Avoidance. Explain one scheme of Distributed deadlock Detection and Recovery.	2
(c)	Discuss the motivation behind parallel and distributed databases.	5
(d)	What is an object identifier? Explain with an example. What are its advantages and disadvantages?	3
(e)	What problem can occur in a distributed system due to the failure of link and partitioning of the network? What are the ways by which recovery can take place?	4

SECTION C

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

Qno	Questions	CO
(a)	What are homogenous and heterogeneous database. Give the architecture of heterogeneous database along with some query processing issues.	1
(b)	Explain briefly about Fragmentation with suitable examples.	1

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

Qno	Questions	CO
(a)	Justify that three-phase commit (3PC) protocol is a non-blocking protocol.	2
(b)	Discuss the objectives of distributed query processing. Explain the various phrases in distributed query processing in detail.	2

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

Qno	Questions	CO
(a)	Discuss the issues to achieve atomicity in distributed transaction management system.	3
(b)	Explain briefly about timestamp-based concurrency algorithms.	3

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

Qno	Questions	CO
(a)	Describe the followings (i) Consistent Checkpoints (ii) Voting protocols.	4
(b)	Generate an algorithm for synchronous check pointing in a Distributed database system.	4

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

Qno	Questions	CO
(a)	What is the difference between persistent and transient objects? How is persistence handled in OO database systems	5
(b)	Compare ORDBMS and OODBMS with respect to Data sharing, data modelling and data accessing.	5