Sub Code:RCAE35

Paper Id: 214509 Roll No:

MCA
(SEM-V) THEORY EXAMINATION 2019-20
DISTRIBUTED SYSTEMS

Time: 3 Hours *Total Marks: 70*

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2 x 7 = 14

a.	Mention any two examples of Distributed System in brief.
b.	What is the role of Middleware?
c.	How the openness of Distributed System can be defined?
d.	Define Transparency along with its types.
e.	What is Wait for Graph? Illustrate with suitable example.
f.	Differentiate between Token based and Non Token based Algorithms.
g.	Differentiate between Forward Error Recovery and Backward Error Recovery Algorithms.

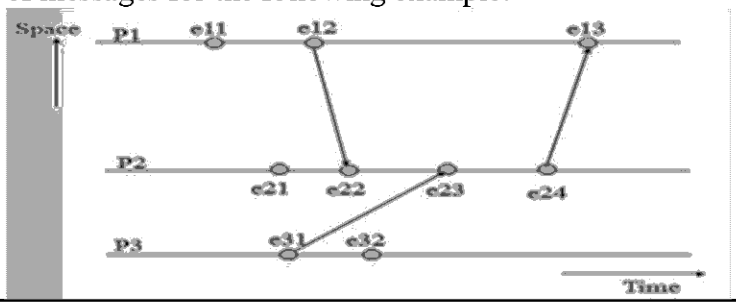
SECTION B

2. Attempt any *three* of the following: 7 x 3 = 21

a.	Explain Edge Chasing Algorithm for Distributed Deadlock Detection.
b.	Explain Ho-Ramamurthy Algorithm for Deadlock Detection. What are the Phantom Deadlocks? Does this algorithm detect the Phantom Deadlock?
c.	Define fault and failure. What are different approaches to Fault-Tolerance?
d.	What are Agreement Protocols? Explain Byzantine Agreement Problem, the Consensus Problem and Interactive Consistency Problem.
e.	List out advantages and disadvantage of Forward Error Recovery. Explain two approaches of Backward Error Recovery.

SECTION C

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

(a)	Discuss the major issues in Designing a Distributed System.
(b)	Explain the Vector Clocks for Global Clock Implementation. Give the Vector Timestamp of messages for the following example: 

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

(a)	What is Termination Detection in distributed system? Explain any algorithm for Termination Detection.
(b)	What is Mutual Exclusion? Describe the requirements of Mutual Exclusion in distributed system. Is Mutual Exclusion problem more complex in Distributed System than Single Computer System? Justify your answer.

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

(a)	What is Voting Protocol? Differentiate between Static and Dynamic Voting Protocol.
(b)	Give two approaches for restoring an erroneous state. Also explain its approaches.

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

(a)	Discuss about the Raymond's Tree Algorithm with the help of an example. Also give its performance measurement.
(b)	What are the requirements of a good Mutual Exclusion Algorithm? Explain the Performance Metrics to judge the Performance of Distributed Mutual Exclusion Algorithm. Also explain a simple solution of it.

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

(a)	Explain different requirements for providing locking in nested transactions.
(b)	Explain the Architectural Model for replicated data. Also explain its phases in detail.

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