Printed Pages: 02 **Subject Code:ECS701**

Paper Id: 110710 **Roll No:** | | | | | | | | | | |

BTECH
(SEM VII) THEORY EXAMINATION 2018-19
DISTRIBUTED SYSTEM

Time: 3 Hours ***Total Marks:100***

Notes: *Assume any Missing Data.*

SECTION A

1. Attempt *all* questions in brief. 2 x10 = 20

a. Explain the architecture of distributed systems with the help of a diagram.
b. Define cuts in distributed computation.
c. Differentiate between resource and communication deadlocks.
d. Explain the necessary conditions that a deadlock detection algorithm must satisfy.
e. Describe agreement protocol in distributed system.
f. Explain the three performance aspects of agreement protocols.
g. Differentiate between fault and failure.
h. What are checkpoints in distributed database systems?
i. Distinguish between flat and nested transactions with the help of a diagram.
j. Why replication is important in distributed systems.

SECTION B

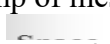
2. Attempt any *three* of the following: 10 x 3 = 30

a. Explain any one protocol that make use of vector clocks for causal ordering of messages in distributed systems.
b. Explain and differentiate between edge chasing and path pushing deadlock detection algorithm.
c. How the three classification agreement protocols are related to each other? And how they can be solved in relationship? Discuss.
d. Explain the following terms in detail:
   i) Livelocks
   ii) Domino effects
e. Explain different requirements for providing locking in nested transactions.

SECTION C

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

(a) Explain the vector clocks for global clock implementation. Give the vector time stamp of messages for the following example:



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(b) Explain Huang's Termination Detection algorithm.

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

(a) 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.
(b) Discuss about the Raymond's Tree algorithm with the help of an example. Also give its performance measurement.

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

(a) Explain the typical data access Client/File Server architecture. Also explain different mechanisms used for the building of distributed file system.
(b) Explain the Read Replication and Full Replication algorithm for implementing DSM in distributed systems.

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

(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.

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

(a) Explain the architectural model for replicated data. Also explain its phases in detail.
(b) Describe the Two Phase Commit Protocol in flat and nested transactions.

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