H

TCS/TIT–801

B. TECH. (CS/IT) (EIGHTH SEMESTER) MID SEMESTER EXAMINATION, 2019

DISTRIBUTED SYSTEMS

Time : 1:30 Hours

Maximum Marks : 50

Note : (i) This question paper contains two Sections.

(ii) Both Sections are compulsory.

Section—A

1. Fill in the blanks : (1×5=5 Marks)

   (a) Distributed database system is a database physically stored on several computer systems across .... connected together via ....

   (b) Distributed database systems arose from the need to offer local database autonomy at .... locations.

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(c) .... is an architecture that enables distributed computing resources on a network to share common resources among groups of users of intelligent workstation.

(d) .... is a database physically stored in two *or* more computer systems.

(e) Heterogeneous distributed database system is also referred to as a .... or ....

2. Attempt any *five* parts :   (3×5=15 Marks)

   (a) Define clock synchronization in distributed systems. What are logical and physical clocks ?

   (b) What is mutual exclusion ? Difference between token based algorithm and non-token-based Algorithm in mutual exclusion.

   (c) Define the mechanism for deadlock detection in distributed system.

   (d) What is the significance of marker in Chandy-Lamport algorithm ? Explain.

   (e) What do you understand by 'language mechanism' for synchronization ? Explain.

   (f) What are the basic applications of Distributed process implementation.

Section—B

3. Attempt any *two* parts of choice from (a), (b) and (c).   (5×2=10 Marks)

   (a) Explain Edge Chasing Algorithm. Define the role Atomic commit in Distributed Database system.

   (b) Define Byzantine agreement problem with its solution. What do you mean by agreement protocol ?

   (c) Write short notes on the following :
       (i) Centralized deadlock detection
       (ii) Distributed deadlock detection

4. Attempt any *two* parts of choice from (a), (b) and (c).   (5×2=10 Marks)

   (a) Explain the four issues of distributed system in details. How is clock synchronization done in distributed system ?

   (b) Define Consensus problem with its solution. Compare it with Byzantine problem.

   (c) Consider a distributed environment of the prevailing WWW and discuss the challenges meeting our sharing of resources.

5. Attempt any *two* parts of choice from (a), (b) and (c).   (5×2=10 Marks)

   (a) Compare the various types of system models in distributed environment.

   (b) How is iterative consistency model implemented if replicated migrating blocks are used in distributed shared memory implementation ?

   (c) List the various challenges during the construction of distributed system. Describe the challenges while designing of scalable distributed system.