Printed Pages: 4 MCAE-16/NMCAE-015

(Following Paper ID and Roll No. to be filled in your Answer Books)	
Paper ID : 214461	Roll No.

M.C.A.

Theory Examination (Semester-IV) 2015-16

DISTRIBUTED SYSTEM

Time : 3 Hours *Max. Marks : 100*

Note: Attempt questions from all Sections as per directions.

Section-A

1. Attempt all parts of this section. Answer in brief. (2×10 = 20)

(a) What is Distributed System? Discuss the limitations of the Distribution System.

(b) Discuss the Lamport Logical Clock.

(c) What are the requirements of mutual exclusion algorithm?

(d) Why time-stamping cannot lead to deadlock and why locking can?

(e) What is clock drift? How it can be compensated?

(f) Discuss necessary and sufficient conditions for deadlock to occur in a system.

(g) Explain fault tolerant services.

(h) Define Live-locks. How it is different from deadlocks?

(i) Discuss the problems which are caused by rolling back of processes.

(j) What is the significance of threads? Discuss.

Section-B

2. Attempt any five questions from this section. (10×5 = 50)

(a) What are Atomic Commit protocols? Describe operation of Two-phase Atomic- Commit protocol.

(b) Explain in detail one non-token based algorithm for achieving mutual exclusion in distributed systems.

(c) Compare and contrast the methods of Concurrency Control for transactions. Explain the methods for Concurrency Control in distributed transactions.

(d) What is Caching and Cache Consistency? Describe various writing policies used to manage file cache of a client to ensure consistency.

(e) What do you mean by Failure? Illustrating the classification of failure with example.

(f) Differentiate between the backward and forward error recovery. How the recovery in Replicated Distributed Database system can be achieved?

(g) Describe Casual ordering of messages and also explain with a suitable example how it can be implemented system of vector clocks.

(h) Draw and explain the general architecture of distributed shared memory system. Also write its advantages.

Section-C

Attempt any two questions from this section (15×2 = 30)

3. What do you mean by agreement protocol? What are the differences between Byzantine Agreement problem, the consensus problem, and the interactive consistency problem? Discuss impossibility results for Byzantine Agreement

4. What are the deadlock handling strategies in distributed system? What are the control organizations for distributed deadlock detection? Discuss a algorithm which can remove the possibility of Phantom deadlock detection.

5. Write short notes on any three of the following:

   (i) Application of Agreement Protocol

   (ii) Deadlock Prevention

   (iii) Dynamic Voting Protocols

   (iv) Distributed Resource Management.