



Printed Pages : 3

CS – 801

(Following Paper ID and Roll No. to be filled in your Answer Book)

**PAPER ID : 1039**

Roll No.

**B. Tech.**

(SEM. VIII) EXAMINATION, 2006-07

**DISTRIBUTED SYSTEM**

*Time : 3 Hours]*

*[Total Marks : 100*

*Note : Attempt all questions.*

**1 Attempt any four parts : 5×4=20**

- (a) What are distributed systems? Name two advantages and two disadvantages of distributed system over centralized ones. Explain in your own words the concept of parallelism transparency.
- (b) Give five types of hardware resource and five types of data or software resource that can be shared. Give example of their sharing as it occurs in distributed systems.
- (c) Why is computer clock synchronization necessary? Describe the design requirement for a system to synchronize the clocks in a distributed system?
- (d) Give an example execution of the ring-based algorithm to show that processes are not necessarily granted entry to critical section in happened before order.

V-1039]

1

[Contd...

- (e) Explain the Bully algorithm.
- (f) What are vector clocks? What are the advantages of vector clock over Lamport clock?

**2** Attempt any **two** parts : **10×2=20**

- (a) What are Phantom Deadlocks? Explain the algorithm which could detect phantom deadlocks?
- (b) Construct a solution to reliable, totally ordered multicast in a synchronous system, using a reliable multicast and a solution to the consensus problem.
- (c) What are Agreement Protocols? What are Agreement and validity objectives of Byzantine Agreement Problems?

**3** Attempt any **two** parts : **10×2=20**

- (a) What do you mean by the Distributed object model ? Write a short note on Remote method invocations.
- (b) What do you mean by Digital Signature ? Explain the different methods for generating and verifying signatures.
- (c) What is the difference between a file service using the upload/download model and one using the remote access model? What is the difference between tree structured directory system from a general graph structured system?

**4** Attempt any **two** parts : **10×2=20**

- (a) Describe how a non-recoverable situation could arise if write locks are released after the last operation of a transaction but before its commitment.

V-1039]

2

[Contd...

- (b) What are the advantages and drawbacks of multiversion timestamp ordering in comparison with the ordering timestamp ordering.
- (c) Explain the difference between linearizability and sequential consistency, and why the latter is more practical to implement, in general ?

**5** Attempt any **two** parts : **10×2=20**

- (a) What is Routing? What is Destination based routing?
- (b) What is Election Algorithm? Suppose that two processes detect the demise of the coordinator simultaneously and both decide to hold an election using the bully algorithm. What happens?
- (c) Write short notes on :
  - (i) ARP problem
  - (ii) Deadlock free Packet Switching.