

Total No. of Questions : 12]

SEAT No. :

P1440

[4759] - 194

[Total No. of Pages :3

B.E. (IT)

DISTRIBUTED SYSTEMS

(2008 Pattern) (Semester - II)

Time : 3 Hours]

[Max. Marks : 100

Instructions to the candidates:

- 1) *Answers to the two sections should be written in separate answer books.*
- 2) *Answer any three questions from each section.*
- 3) *Neat diagrams must be drawn wherever necessary.*
- 4) *Figures to the right side indicate full marks.*
- 5) *Use of Calculator is allowed.*
- 6) *Assume Suitable data if necessary.*

SECTION - I

- Q1)** a) Describe architecture model of Distributed System design. How these models play important role in the design of a distributed system? [9]
- b) Discuss different challenges in designing distributed system. [9]

OR

- Q2)** a) Describe the working of distributed system based upon middleware software systems. Also clearly describe the roles played by middleware in distributed system. [9]
- b) What is a failure model? Explain different failures in detail. [9]

- Q3)** a) What is a Remote Method Invocation? How would you incorporate persistent asynchronous communication into model of communication based on RMIs to remote object? [8]
- b) What is socket? What is the difference between connection-oriented socket and connection-less socket? [8]

OR

P.T.O.

Q4) a) What is CORBA? Describe the general organization of CORBA system with help of a neat diagram. [8]

b) Compare local method invocation and remote method invocation. Explain the role of proxy and skeleton in remote method invocation in detail.[8]

Q5) a) Explain the concept of logic clock and their importance in distributed system. A clock of a computer system must never run backward. Explain how this issue can be handled in an implementation. [8]

b) Explain Ricart and Agrawala's algorithm for mutual exclusion in detail.[8]

OR

Q6) a) Suppose that the coordinator crashes. Does this always bring the system down? If not, under what a circumstance does this happened? Is there any way to avoid the problem and tolerate the crash of the coordinator? [8]

b) Define global state. Explain consistent cut and inconsistent cut with suitable example. [8]

SECTION - II

Q7) a) How does the NFS Automounter help to improve the performance and scalability of NFS? [9]

b) Write a short note on [9]

i) Global name service

ii) X.500 directory service

OR

Q8) a) Explain following term with respect to Naming entities: [9]

i) Names

ii) Identifiers

- iii) Addresses
- iv) Name Spaces
- b) Explain synchronization and naming in NFS. [9]

- Q9)** a) Explain different implementation approaches to DSM. [8]
- b) What is Data centric consistency model? Explain in detail. [8]

OR

- Q10)** a) Explain monotonic reads and monotonic write. [8]
- b) What is thrashing? Why thrashing is an important issue in DSM systems and what methods are available for dealing with it. [8]

- Q11)** a) What is Byzantine's General problem? Describe Lamport's algorithm to solve this problem. [8]
- b) Explain following points related to fault tolerance issues in Distributed Systems: [8]
- i) Availability
 - ii) Reliability
 - iii) Failure Models
 - iv) Triple modular redundancy

OR

- Q12)** a) Explain basic reliable multicasting. How it could be made scalable. [8]
- b) Draw state transition diagram for Two phase commit protocol and highlight the states where the participant is get blocked. Also mention the drawbacks of 2PC. [8]

