P956

# [3664]-345

## B.E. (Computer Engineering)

## DISTRIBUTED SYSTEMS

## (410451) sem 2 (Elective - II)

*Time : 3 Hours]* *[Max. Marks : 100*

***Instructions to the candidates:***

1) ***Answer to the two sections should be written in separate books.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***Use of logarithmic tables, slide rule, mollier charts, electronic pocket calculator and steam table is allowed.***
5) ***Assume suitable data, if necessary.***

## SECTION - I

***Q1)*** a) Explain alternative client server organizations in two tiered architecture. **[6]**

b) What is open distributed system and what benefits does openness provide? **[6]**

c) Why is it not always a good idea to aim at implementing highest degree of transparency possible? **[6]**

OR

***Q2)*** a) Explain different transparencies in distributed system with suitable examples. **[6]**

b) Explain scalability techniques in distributed system. **[6]**

c) Consider chain of processes $P_1$, $P_2$, ...$P_n$ implementing a multitiered client-server architecture. Process $P_i$ is client of process $P_{i+1}$, and $P_i$ will return a reply to $P_{i-1}$ only after receiving a reply from $P_{i+1}$. What are main problems with this organization when taking a look at the request-reply performance of process $P_1$? **[6]**

***Q3)*** a) What are the issues concerned with parameter passing in RPC system? **[8]**

b) Explain different forms of communication in message oriented communication. **[8]**

OR

*Q4)* a) Explain basic organization of RSVP for resource reservation in a distributed system. [8]

b) Explain principle of using doors as IPC mechanism. [8]

*Q5)* a) What is X.500? Describe the organization of X.500 name space. [6]

b) Explain the working of xFS in detail. [6]

c) Explain how a Coda client can continue to operate while being disconnected from server. [4]

OR

*Q6)* a) State different semantics of file sharing and explain semantic of file sharing implemented by NFS. [6]

b) What calling semantics does RPC2 provide in presence of failures? [6]

c) Explain resolution methods in DNS. [4]

## SECTION - II

*Q7)* a) To achieve totally-ordered multicasting with Lamport timestamps, is it necessary that each message is acknowledged? Explain. [6]

b) Compare Cristian and Berkeley algorithms of clock synchronization. [6]

c) Explain different classes of transactions in distributed system. [6]

OR

*Q8)* a) Compare Bully and Ring algorithms with respect to time complexities. [6]

b) Explain importance of clock synchronization by suitable example. [6]

c) A distributed system may have multiple, independent critical regions. Imagine that process 0 wants to enter critical region A and process 1 wants to enter critical region B. Can Ricart and Agarwala's algorithm lead to deadlocks? Explain. [6]

*Q9)* a) Explain different approaches for masking faults. [6]

b) Explain the principle of virtual synchronous multicast. [6]

c) Why receiver-based message logging is generally considered better than sender-based logging? Explain. [4]

OR

*Q10)* a) Explain reliable multicasting schemes for group communication. [8]

b) Explain RPC semantics in presence of failures for client server communication. [8]

*Q11)* a) Explain general organization of a CORBA system. [6]

b) Explain different types of clusters with examples. [4]

c) How does grid computing work? [6]

OR

*Q12)* a) How does Portable Object Adapter use a servant to build image of CORBA object? [6]

b) Explain different types of GRIDS with examples. [4]

c) Explain different CORBA services. [6]