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B.E. (Information Technology)
DISTRIBUTED SYSTEMS
(2008 Pourse) (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 jf necessary.

SECTION - I

Q1) a)   What are different transparencies available in distributed systems? Explain any two   **[8]**

b)   Explain challenge of heterogeneity in Distributed System and how it is overcome?   **[10]**

OR

Q2) a)   Explain Peer-to-Peer Architecture with a neat diagram and its advantage.**[8]**

b)   Give different types of hardware resources and data or software resources that can be shared. Give examples of their sharing as it occurs in Distributed System   **[10]**

Q3) a)   What is a message broker? What are its characteristics?   **[8]**

b)   Define Sockets, Ports, IP Address and Connection oriented Protocol**[8]**

OR

Q4) a)   Explain different Invocation Semantics   **[8]**

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

Q5) a)   How do you synchronize the clock with a computer? Can we use a GPS receiver for all computers in world? Justify your answer.   **[8]**

b)   Describe Cristian algorithm for clock synchronization   **[8]**

Q6) a) Show the instances where we cannot conclude C(a)<C(b) or C(b)<C(a). Draw appropriate timing diagram. **[8]**

b) What are the disadvantages of Centralized and Distributed Mutual Exclusion Algorithm. **[8]**

SECTION - II

Q7) a) What is automounting? Explain a simple automounter for NFS and how it help to improve the performance and scalability of NFS? **[8]**

b) Compare NFS with CODA File System. **[8]**

OR

Q8) a) Explain in brief basic Secure File System and Serverless File System.**[8]**

b) Write a short note on caching and replication in CODA file system. **[8]**

Q9) a) What is consistency model? Explain Monotonic writes and Writes follow reads in client centric consistency model? **[8]**

b) Explain immutable file sharing semantics. Can a file system works if it support above immutable file sharing semantics. Justify your answer**[8]**

OR

*Q10)*a) Why replicas must be consistent? Explain following Data Centric Consistency Models. **[8]**

    i)   Causal

    ii) Sequential

b) Explain design and implementation issues of Distributed Shared Memory in details. **[8]**

*Q11)*a) Explain [8]

      i)   Flat and Hierarchical groups

      ii)   Open and closed groups

   b) Explain basic reliable multicasting. How it could be made scalable?**[10]**

<div align="center">OR</div>

*Q12)*a) Explain [10]

      i)   FIFO ordering

      ii)   Causal ordering

      iii)   Total-Ordering

      iv) No Ordering

   b) Explain Byzantine Generals Problem. Why do we need to have 3m+l total processes for system to work correctly, assuming non-faulty commander? **[8]**

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