[4660] - 428

M.E. (Computer Engineering) (Semester - II)
DISTRIBUTED SYSTEMS
(2008 Pattern)

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

Instructions to the candidates:

    1)   Answer any three questions from each section.

    2)   Answer to the two sections should be written in separate answer books.

    3)   Figures to the right indicate full marks.

    4)   Assume suitable data, if necessary.

SECTION-I

Q1) a) Why is scalability an important feature in the design of a distributed system? Discuss some of the guiding principles for designing a scalable distributed system. **[6]**

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

    c) Explain what is meant by transparency and give examples of different types of transparency in distributed systems. **[4]**

Q2) a) List out issues and difficulties related to design and implementation of middleware for peer-to-peer System. Suggest solutions to overcome such issues. **[8]**

    b) Explain Ricart and Agrawala's algorithm for mutual exclusion. Can Ricart and Agrawala's algorithm lead to deadlocks? Justify. **[8]**

Q3) a) Describe blocking and non-blocking types of IPC. Which is easier to implement and why? Discuss their relative merits and demerits. **[8]**

    b) Explain how NTP distribute time information over the internet. **[8]**

Q4) Write notes on any THREE : **[18]**

    a) Distributed transactions

    b) Maekawa's voting algorithm

    c) Events and notifications

    d) Automounter in NFS

SECTION - II

Q5) a) What is key distribution problem? How does it differ for symmetric and asymmetric cryptosystems? **[8]**

b) How Diffie-Hellman based Key Agreement protocol is beneficial for providing security in group communication issues? How can this protocol be used for secured cash transfer in banking transactions? **[8]**

Q6) a) Explain RPC mechanism in detail with the help of diagram. **[6]**

b) What is false sharing? When it is likely to occur? Can this problem lead to any other problem in a DSM system? Explain with reason. **[6]**

c) What are the three main approaches for designing a DSM system? **[4]**

Q7) a) A coordination protocol could be carried out in order to coordinate the actions of web services. Outline the architecture for a centralized and distributed coordination protocol. In each case, describe the interactions needed to establish coordination between a pair of web services. **[8]**

b) Explain why UDDI can be described as being both a name service and a directory service. **[8]**

Q8) Explain any THREE with suitable example : **[18]**

a) Digital signatures

b) SOAP Architecture

c) X.500 directory service

d) Inter-process communication in UNIX

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