Total No. of Questions : 8]

SEAT No. :

P4001

[Total No. of Pages : 3

[4760]- 403
M.E. (Computer Engg.)
DISTRIBUTED SYSTEMS
(2008 Pattern)

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

Instructions to the candidates:

1) ***Answer any three questions from each section.***
2) ***Answers to the two sections should be written in separate answer books.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right indicate full marks.***
5) ***Assume suitable data, if necessary.***

SECTION - I

Q1) a) Explain, in detail, the challenges encountered during the design of distributed systems. **[8]**

b) What do you mean by physical model of distributed system? Explain following physical models in detail- **[10]**

i) Baseline Physical model

ii) Early distributed systems

iii) Internet-scale distributed systems

iv) Contemporary distributed systems

v) Distributed systems of systems

Q2) a) Explain the characteristics of interprocess communication. **[6]**

b) Define - **[10]**

i) External data representation

ii) Marshalling and Unmarshalling

Discuss three approaches for External data representation and marshalling.

P.T.O.

Q3) a) Discuss the following elements in detail - **[8]**

i) Clock

ii) Clock skew and clock drift

iii) Coordinated universal time

iv) Events and history of process

b) Describe Chandy and Lamport's 'snapshot' algorithm for determining global states of distributed systems. **[8]**

Q4) Write short notes on- **[16]**

a) Client-server communication.

b) Java RMI

c) Mutual exclusion

d) Synchronizing physical clocks

SECTION - II

Q5) a) Explain the goals of Global Name Service. Explain as an example of name service, Internet Domain Name System (DNS). **[8]**

b) Draw schematic of the File Service Architecture. Explain the following modules of this architecture. **[10]**

i) Flat file service

ii) Directory service

iii) Client module

iv) Flat file service interface

Q6) a) What are the different threats and attacks for computer systems? **[8]**

b) Explain the use of cryptography in- **[8]**

i) Secrecy and Integrity

ii) Authentication

iii) Digital Signatures

Q7) a) Explain sequential consistency model in detail. **[8]**

b) With the help of a neat schematic, explain the main data structures of Universal Description, Discovery and Integration Service (UDDI). **[8]**

Q8) Write short notes on- **[16]**

a) Access Control Mechanisms

b) Coordination of web service

c) Release consistency

d) Sun Network File System