UNIVERSITY OF PUNE

[4364]-773

B. E. (Computer Engineering)
Examination - 2013
Distributed Operating System
(2008 Pattern)

[Time : 3 Hours]   [Max. Marks : 100]
Total No. of Questions : 12   [Total No. of Printed Pages :3]
Instructions :

*(1) Answer **any three** questions from each section.*

*(2) Answers to the **two sections** should be written in **separate answer-books**.*

(3) Black figures to the right indicate full marks.

(4) Neat diagrams must be drawn wherever necessary.

(5) Assume suitable data, if necessary.

Section I

Q1. A   Compare between Multicomputer operating system, network operating   06
         system and distributed operating system.

     B   Explain the following issues with respect to RPC.   10
         1. structure
         2. binding
         3. parameter and result passing
         4. Semantics
         5. error handling

OR

Q2. A   What is Distributing Operating System? Explain features of Distributing   06
         Operating System in detail.

     B   Write a note on CORBA   04

     C   What is Remote Method Invocation? Explain modules in RMI?   06

Q3   A   Explain the following with respect to synchronization in Distributed O.S.   08
             1. Clock Skew
             2. Drift Rate
             3. Casual ordering
             4. Partial ordering

1

B   Why Lamport logic clock is required? What are the conditions satisfied   08
by logical clocks? Discuss the limitation of Lamport's clock how do
overcome those.

OR

Q4.   A   Explain the following: 10
          1. Physical clock
          2. Logical clock
          3. Vector clock
    In distributed O.S.

B   Why election algorithm is required in distributed operation system?   06
Explain it with any one election algorithm.

Q5.   A   Discuss the impact of message loss following deadlock detection   10
algorithms.
          1. A path pushing algorithms
          2. A edge chasing algorithms

B   What are the different issues in deadlock detection and resolution? How   08
Ho-Ramamoorthy algorithm is used in deadlock detection and
resolution?

OR

Q6.   A   Distributed deadlock detection algorithms normally have substantial   10
message overhead, even when there is no deadlock. Instead of using a
deadlock detection algorithm, we can handle deadlocks in distributed
system simply by using "timeouts" i.e. after waiting certain time
declares that it is deadlock, what are the risks in using this method?
Explain the above scenario by comparing this with any deadlock
detection algorithm.

B   Show that Byzantine agreement cannot always be reached among four   08
processor if two processor are faulty.

Section II

Q7.   A   What is distributed scheduling? Why it is needed? What are the different   12
issues in load distribution? Explain sender initiated algorithm in detail.

B   Discuss distributed shared memory system with architecture. What is   06
the main motivation behind implementing DSM.

OR

Q8.   A   What is distributed scheduling? Why it is needed? What are the different   12
issues in load distribution? Explain receiver initiated algorithm in detail.

B   Explain with examples various consistency models used in distributed   06
shared memory system. Also explain granularity aspect in DSM

Q9.   A   How the recovery mechanism achieved in distributed Operating system   08
using rollback and shadow paging? Explain with suitable example

      B   What is Rollback? How does it help in recovery mechanism? Explain in   08
details the rollback recovery algorithm

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

Q10.   A   Write note on: 08
1. Recovery in concurrent system.
2. Synchronous and Asynchronous check pointing and recovery

      B   How do we achieve the security in the distributed operating system?   08
Explain it with access matrix model for security.

Q11   A   What is the cluster? How do you compare cluster with distributed   10
system? How do we classify the clusters? Give any suitable example of
the cluster.

      B   What are web services? How do you compare it to components? And   06
then Compare between service oriented architecture and component
based architecture.

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

Q12.   A   Explain the relation of the following system with distribution system   10
1. Cluster computing
2. Grid computing
3. Cloud computing
4. Service oriented architecture

      B   What is the cluster computing? Explain in brief types/ Classification of   06
cluster. Compare cluster computing with Grid Computing.