

Seat No. : _____

DA-136

December-2013

**5 Years M.Sc. (CA & IT) Integrated (KS)
Distributed Operating System**

Time : 3 Hours]

[Max. Marks : 100

1. (a) Answer any **three** : **15**
- (1) What is a distributed computing system ? How to design a scalable distributed system ?
 - (2) Briefly explain 'Group management' & 'Group Addressing' in content of one-to-many communication of message passing.
 - (3) Explain RPC call and Reply message format.
 - (4) Explain different message forwarding mechanisms used in process migration.
- (b) Write a short note on ATM networks : **5**
2. Answer any **four** : **20**
- (1) Explain link based process addressing method. What are the disadvantages of this method ?
 - (2) How RPC can be optimized for better performance ?
 - (3) Explain with the help of diagram general architecture of DSM.
 - (4) Which conditions must be satisfied by any algorithm used for implementing logical clocks ? Explain with the help of example implementation of logical clocks using physical clocks.
 - (5) Explain any one mechanism used for concurrency control in distributed file systems.
3. Answer any **four** : **20**
- (1) Briefly explain diff. call semantics used in RPC systems.
 - (2) Explain the sequential and casual consistency model used in DSM.
 - (3) Which are the different approaches for implementing mutual inclusion in distributed systems ? Explain any one approach.
 - (4) Explain with the help of diagram pre-transfer mechanism for transferring address space of a process. What are the advantages and disadvantages of this method ?
 - (5) Explain the different modification propagation schemes used in file caching.

4. Answer any **four** : **20**
- (1) Briefly explain the issues in replacement strategy of DSM.
 - (2) Explain the probe based distributed algorithm for deadlock detection.
 - (3) Discuss the process transfer policy in load balancing approach.
 - (4) What are the main motivations for using a multithreaded process than multiple single threaded processes ? Briefly explain thread synchronization.
 - (5) Differentiate between file replication and caching. Explain the client initiated and server initiated approach for validating cached data.
5. (a) Answer any **five** : **15**
- (1) What is preemptive and non-preemptive process migration ? What are their advantages and disadvantages ?
 - (2) Explain with the help of diagram expanding ring broadcast method for object location.
 - (3) Explain the workstation-server model for building a distributed computing system.
 - (4) Give solution to thrashing problem in DSM systems.
 - (5) Which are the different methods for recovery from deadlock ?
 - (6) Which are the possible failures in a message passing system ?
- (b) Define in the content of naming system : **5**
- (1) Name Space
 - (2) Name Server
 - (3) Name Agent
 - (4) Name Resolution
 - (5) Name Cache
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