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P.E.S. College of Engineering, Mandya - 571 401
 (An Autonomous Institution affiliated to VTU, Belgaum)
Seventh Semester, B.E. - Computer Science and Engineering
Semester End Examination; Dec. - 2014
Distributed Operating Systems

Time: 3 hrs

Max. Marks: 100

Note: Answer any FIVE full questions, selecting at least TWO full questions from each part.

PART - A

1. a. Discuss the advantages of using workstation server model in comparison with workstation model for building distributed computing system. 8
- b. Why is heterogeneity unavoidable in many distributed system? What are the common types of incompatibilities encountered in heterogeneous distributed environment and explain how to solve the problem? 6
- c. List and explain the main components of DCE. 6
2. a. With respect to distributed computing environment discuss the various issues in IPC by message passing. 6
- b. Differentiate: Explicit and implicit addressing. 4
- c. What do you mean by absolute ordering and consistent ordering? Explain further the mechanism to implement casual ordering (CBCAST Protocol) 10
3. a. Explain how the use of stubs helps in making an RPC to convert parameters between client and servers. 6
- b. Differentiate stateful and stateless servers. Why stateless servers are more preferable than stateful servers in distributed environment? 6
- c. List the different types of call semantics used in RPC and explain any two semantics. 8
4. a. What are the two basic protocols that may be used for ensuring sequential consistency in replicated migrating blocks strategy (RMB)? Discuss these protocols in detail. 10
- b. What are the main causes of thrashing in a DSM system? Discuss the commonly used methods to solve the thrashing problem in a DSM system. 10

PART - B

5. a. Illustrate with an example for implementing logical clock by using physical clock. 6
- b. Explain with an example, the mutual exclusion implementation using distributed approach. 6
- c. Consider a group of distributed system processes P_1, P_2, P_3, P_4 and P_5 . The current coordinator is P_5 . The process, P_5 fails and P_2 notices the failure. If the bully algorithm is used for election of a new coordinator and the election attribute is the maximum of process numbers. Show the set of all messages communicated through each communication channel for this election show the type of each message as “election”, “response” or “Coordinator”. 8

- 6 a. What is processor thrashing? Give examples of two global scheduling algorithms that may lead to processor thrashing. Suggest necessary measures to be taken to handle this problem. 10
- b. Discuss in detail about the location policies used for load sharing with their relative merits and demerits. 10
- 7 a. List the advantages of process migration and also explain the different mechanism used for process migration. 10
- b. Explain the implementation of Kernel level threads and also discuss the merits and demerits of kernel level threads over user level threads. 10
- 8 a. List and explain the various file sharing semantics. 10
- b. Explain the two approaches to verify the validity of Cache data. 10

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