GUJARAT TECHNOLOGICAL UNIVERSITY
M. E. - SEMESTER – I • EXAMINATION – WINTER • 2013

Subject code: 710103N   **Date: 26-12-2013**
Subject Name: Distributed Operating System
Time: 10.30 am – 01.00 pm   **Total Marks: 70**
Instructions:
1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1 **(a)** What are the major issues in designing a distributed operating system?   **07**
(b) Why are conventional communication protocols for network systems generally not suitable for distributed systems? What are the special requirements for distributed systems?   **07**

Q.2 **(a)** What is datagram? Why are multidatagram message used in IPC? What are the main issues in IPC of multidatagram messages?   **07**
(b) Explain what is meant by absolute ordering, consistent ordering, and casual ordering of messages. Give a mechanism to implement each one.   **07**
OR
(b) Differentiate between stateful and stateless servers. Why do some distributed applications use stateless servers?   **07**

Q.3 **(a)** What is an orphan call? How are orphan calls handled in the implementation of the different types of call semantics?   **07**
(b) What is false sharing? When is it likely to occur? Can this problem lead to any other problem in a DSM system?   **07**
OR
Q.3 **(a)** What is callback RPC facility? Give an example of an application where this facility may be useful?   **07**
(b) Differentiate between weak consistency and release consistency. Which of the two will you prefer to use in the design of a DSM system?   **07**

Q.4 **(a)** Differentiate between internal synchronization and external synchronization of clocks in a distributed system. Externally synchronized clocks are also internally synchronized, but the converse is not true. Explain why?   **07**
(b) What is "processor thrashing"? Give example of two global scheduling algorithms that may lead to processor thrashing. Suggest measure to handle this problem.   **07**
OR
Q.4 **(a)** Explain the concept of logical clocks and their importance in DS.   **07**
(b) What are some of the main issues involved in designing a process migration facility for a heterogeneous distributed system?   **07**

Q.5 **(a)** Name the main components of a distributed file system. What might be the reason for separating the various functions of a distributed file system?   **07**
(b) Describe the policy used in Amoeba for object replication.   **07**
OR
Q.5 **(a)** What is a transaction? What are the two main factors that threaten the atomicity of transactions?   **07**
(b) Describe how threads of a process are synchronized in Mach.   **07**

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