Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

ME Semester –I Examination Feb. - 2012

Subject code: 710103N **Date: 13/02/2012**
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)	(i) Why are conventional communication protocols for network system generally considered to be unsuitable for distributed systems? (ii) Explain primary tasks for designing a distributed operating system using microkernel approach.	**07**
Q.2	**(a)**	Describe blocking and nonblocking types of IPC.	**07**
	(b)	What is a "stub"? How are stubs generated?	**07**
		OR	
	(b)	Explain stateful and stateless servers.	**07**
Q.3	**(a)**	Discuss advantage and disadvantages of using NRNMB and NRMB.	**07**
	(b)	Explain centralized approach to mutual exclusion.	**07**
		OR	
Q.3	**(a)**	Write advantages of Distributed Shared Memory.	**07**
	(b)	Explain partial ordering of events.	**07**
Q.4	**(a)**	A system consists of three processors p1, p2 and p3 and a process having four tasks t1, t2, t3 and t4. Suppose E_{ij} is the cost of executing task t_i on processor p_j and C_{ij} is the communication cost between task t_i and t_j when the two tasks are assigned to different processors. Let $E_{11} = 31$, $E_{12} = 4$, $E_{13} = 14$, $E_{21} = 1$, $E_{22} = 5$, $E_{23} = 6$, $E_{31} = 2$, $E_{32} = 4$, $E_{33} = 24$, $E_{41} = 3$, $E_{42} = 28$, $E_{43} = 10$, $C_{12} = 35$, $C_{13} = 3$, $C_{14} = 8$, $C_{23} = 6$, $C_{24} = 4$ and $C_{34} = 23$. Find an optimal assignment of the tasks to the processor and calculate the cost of optimal assignment.	**07**
	(b)	Explain process migration mechanisms.	**07**
		OR	
Q.4	**(a)**	Discuss practical applicability of task assignment approach as a scheduling for distributed systems.	**07**
	(b)	What are main issues in designing a process migration facility for a heterogeneous distributed system?	**07**
Q.5	**(a)**	Write desirable feature of good distributed file system.	**07**
	(b)	Case study : AMOEBA(Design goal and Features)	**07**
		OR	
Q.5	**(a)**	Explain Call Semantics in RPC.	**07**
	(b)	Case study : Mach(Design goal and Features)	**07**

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