Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME - SEMESTER– I (OLD course)• EXAMINATION – SUMMER 2015

Subject Code: 710103 **Date:13/05/2015**

Subject Name: **Distributed Operating Systems**

Time: 10:30 am to 1:00 pm **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Make suitable assumptions wherever necessary.**

Q1	**(a)**	**(i)**	What is an immutable file? Discuss pros and cons of stateful file servers.	**07**
	(b)	**(i)**	How do clock synchronization issues differ in centralized and distributed Computing systems?	**07**
Q2	**(a)**	**(i)**	Explain distributed algorithm for deadlock detection and prevention.	**04**
		(ii)	Differentiate among the following properties of a Distributed File System: (i) High degree of availability (ii) High degree of recoverability (iii) High degree of robustness Name a suitable mechanism that may be used for implementing each of these Properties.	**03**
	(b)	**(i)**	Describe some flexibility features that a message-passing system should provide to its users. Write suitable IPC primitives that will allow the users to take advantage of these flexibility features.	**07**
			OR	
	(b)	**(i)**	Explain the role of ñBinding agentò in client server binding? List the detailed comparison between Compile time binding, Link time binding and Call time binding.	**07**
Q3	**(a)**	**(i)**	Why do most RPC systems support call-by-value semantics for parameter passing? Justify your answer.	**04**
		(ii)	Explain the Message-Forwarding Mechanism in process migration.	**03**
	(b)	**(i)**	Illustrate the data locating techniques in NRMB strategy with block table.	**04**
		(ii)	Strict consistency model is practically possible or not. Justify the statement with example.	**03**
			OR	
Q3	**(a)**	**(i)**	Describe a mechanism for implementing consistent ordering of messages in each of the following cases: i.) One-to-many communication ii.) Many-to-one communication iii.) Many-to-many communication	**04**
		(ii)	List and explain some programming practice that will reduce network block faults.	**03**
	(b)	**(i)**	Design a load balancing server and pseudo code that checks the load dynamically at every 10 sec. and reforms or arranges in the required format. (Required to analyze the load of every machine periodically)	**03**
		(ii)	What will happen in a bully algorithm fir electing a coordinator when two or more process almost simultaneously discover that the coordinator has crashed? Suggest some suitable mechanism.	**04**

Q4	**(a)**	**(i)**	What is ñstubò? How stubs are generated? Explain how the use of stubs helps in making an RPC mechanism transparent.	**04**
		(ii)	Explain in detail the different types of failures that may occur in distributed environment.	**03**
	(b)	**(i)**	Explain Lamôports algorithm for achieving mutual exclusion in Distributed environment. Compare and Contrast its performance and reliability with that of Ricart and Agrawalaôs Algorithm.	**07**

OR

Q4	**(a)**	**(i)**	Define óclock skewô. How do clock synchronization issues differ in centralized and distributed computing systems? Explain the global averaging distributed algorithm.	**04**
		(ii)	Explain in detail OSI reference model.	**03**
	(b)	**(i)**	Compare and Contrast 1) Micro kernel and monolithic kernel model. 2) Tightly coupled and loosely coupled system.	**07**
Q5	**(a)**	**(i)**	Explain the System Architecture of CHORUS Distributed Operating system.	**07**
	(b)	**(i)**	Explain the Architecture and features of MACH operating system in terms of memory Management.	**07**

OR

Q5	**(a)**	**(i)**	Describe the File Management procedure in Amoeba Distributed Operating System.	**07**
	(b)	**(i)**	Explain the features of DCE Operating System. Also explain the CPU scheduling algorithms supported by DCE Operating System.	**07**

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