Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME - SEMESTER– II(New course) • EXAMINATION (Remedial) – WINTER- 2015

Subject Code: 2720207 **Date: 09/12/2015**

Subject Name: Distributed Computing and Applications

Time:2:30 pm to 5:00 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)**	Define distributed system. What are the differences between distributed systems and non-distributed systems? Mention advantages of distributed systems over centralized systems.	**07**
	(b)	1. Differentiate between monolithic kernel and microkernel approaches for designing a distributed operating system.	**03**
		2. Briefly explain datagram sockets and stream sockets.	**04**
Q.2	**(a)**	Implement a file transfer protocol between client and server using sockets API. The client sends a request to the server mentioning the name of the file. Server checks if the file exists or not. If the file does not exists, server sends appropriate message to the client otherwise the contents of the file will be sent to the client. On client side, a new file will be created which will be the exact copy of the file on the server machine.	**07**
	(b)	1. Describe blokcing and nonblocking types of IPC.	**03**
		2. What is meant by ordered message delivery? Do all applications need the same semantics for this property? If yes explain why? If no, give examples of two applications that need different semantics.	**04**
		OR	
	(b)	Discuss callback RPC in detail.	**07**
Q.3	**(a)**	Discuss any three call semantics of RPC.	**07**
	(b)	Which are the differences between RMI and RPC?	**03**
		Which are the differences between RPC and Local Procedure Call?	**04**
		OR	
Q.3	**(a)**	Discuss static versus dynamic remote method invocation.	**07**
	(b)	Explain benefits of using distributed shared memory in detail.	**07**
Q.4	**(a)**	1. Mention the differences between PRAM consistency model and processor consistency model.	**03**
		2. Explain happened-before relation.	**04**
	(b)	Discuss centralized approach of achieving mutual exclusion between processes in distributed system.	**07**
		OR	
Q.4	**(a)**	Write a short note on bully election algorithm.	**07**
	(b)	Discuss different message forwarding mechanisms of process migration.	**07**
Q.5	**(a)**	Discuss byzantine generals problem in a synchronous system with its solution with one faulty process.	**07**
	(b)	Outline the replication scheme used in UDDI. Supposing that vector timestamps are used to support this scheme, define a pair of operations for use by registries needing to exchange data.	**07**
		OR	
Q.5	**(a)**	Discuss security threats and security policies in distributed systems.	**07**
	(b)	Discuss two-phase commit protocol in detail	**07**