Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M.E Sem-I Examination January 2010

Subject code: 710103 **Subject Name: Distributed Operating System**

Date: 25 / 01 / 2010 **Time: 12.00 – 2.30 pm**

Total Marks: 60

Instructions:

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

Q.1 **(a)** What are two basic inter process communication paradigms and buffering strategies used in inter process communication mechanism? **06**

(b) Why are communication protocols needed in a network system? What are major reasons the layered approach to communication protocol specification and design? **06**

Q.2 **(a)** Explain the ATM protocol reference model and illustrate the problems that occurs due to latency/bandwidth trade-off in high speed ATM network. **06**

(b) What is idempotent operation? Identify following idempotent operations (i) read_next_record(filename) (ii)seek(filename,position) (iii) add(int a1 int a2) (iv) append_record(filename,record) (v) increment(var) **06**

OR

(b) Draw schematic diagram of OSI layered architecture, explain each layer's basic functional role. **06**

Q.3 **(a)** What is piggybacking of message? How does it reduce the network traffic? Give an example of piggybacking scheme **06**

(b) Discuss the similarities and differences between the following parameter passing semantics that may be used in object based system (i) Call by object reference (ii) call by move (iii) call by visit **06**

OR

Q.3 **(a)** The caller process of an RPC must wait for a reply from the callee process after making a call. Explain how can actually be done. **06**

(b) Discus the relative advantages and disadvantages of binding a client and server at compile time, at link time and at call time **06**

Q.4 **(a)** What is stub? How are stubs generated? Explain how the use of stubs help in making RPC mechanism transparent **06**

(b) Of the four data transfer models that may be used in a distributed file system that uses the data caching model for file accessing, which models you will prefer to use for each of the following types of distributed system? Also provide due justification to your answer. **06**

a. A distributed system that supports diskless workstation

b. A distributed system in which each node has large disk storage space

c. A distributed system that uses the structured file model in which each file is a group of records

OR

Q.4	**(a)**	Describe Shadow Blocks Technique for implementing file versions for easier recovery operations in Distributed File System	**06**
	(b)	1. Given scenario of distributed operating system , where a process 'Px' is under migration from node 'A' to node 'B', 'Px' is in communication which another process 'Py' which is on node 'C'. What kind of different message forwarding mechanisms you will suggest handling messages from 'Py' to 'Px' under following situations. a. Execution of 'Px' is stopped at A but not started on B b. Message received at A, where as Px has started execution on B c. A separate node 'D' want to send some message to Px	**06**
Q.5	**(a)**	Describe steps involved in distributed approach for achieving mutual exclusion for a process which wants to enter in to a critical section.	**06**
	(b)	Compare AMOEBA,MACH and CHORUS in terms of (i) Inter process Communication (ii) Memory Management	**06**
		OR	
Q.5	**(a)**	Describe various measuring parameters to estimate the workload of a particular node? Which is the best one? Justify your answer.	**06**
	(b)	Describe Bully Algorithm to elect coordinator process	**06**

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