Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

MCA - SEMESTER–III • EXAMINATION – SUMMER • 2014

Subject Code: 2630004 **Date: 03-06-2014**

Subject Name: Operating Systems (OS)

Time: 02:30 pm - 05:00 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)**	**Answer following in short.** (1) Discuss the possible reasons for process migration. (2) Define F-SCAN policy. (3) What is the relation between FIFO and clock page replacement algorithm? (4) List multiprocessor thread scheduling approaches. (5) What delay elements are involved in a disk read or write? (6) Give the difference between consumable and reusable resources. (7) List the function of cluster middleware.	**07**
	(b)	Explain the utility of process control block. What kind of information is stored in it? Define two main categories of processor registers.	**07**
Q.2	**(a)**	Draw the Unix process state diagram and explain how processes change the states.	**07**
	(b)	List common events lead to a creation of process and also list the steps performed by an OS to create a new process and	**07**
		OR	
	(b)	Why is a user mode and kernel mode considered good operating system? Give an example that illustrate a user process being switched from user mode to kernel mode, and then back to user mode.	**07**
Q.3	**(a)**	Briefly discuss three types of processor scheduling.	**07**
	(b)	What is Message passing? Explain the solution to Bounded-Buffer Producer/Consumer problem using it.	**07**
		OR	
Q.3	**(a)**	Define Readers/Writers problem. What are conditions generally associated with this problem? How can this problem be solved using semaphores?	**07**
	(b)	Discuss ULT and KLT.	**07**
Q.4	**(a)**	What is virtual memory? Describe the combined paging and segmentation approach for memory management explaining how physical address is generated in this scheme.	**07**
	(b)	Explain I/O buffering and Record blocking.	**07**
		OR	
Q.4	**(a)**	Explain Remote Procedure Call and discuss benefits and disadvantages of synchronous and asynchronous RPC.	**07**
	(b)	Discuss internal fragmentation and external fragmentation.	**07**
Q.5	**(a)**	Define client server computing and explain the classes of client server applications and compare it with three tire architecture.	**07**
	(b)	List and Explain deadlock handling strategy.	**07**
		OR	
Q.5	**(a)**	Explain Fair-Share Scheduling and Gang scheduling.	**07**
	(b)	Explain RAID and its level 0-6 in detail	**07**

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