Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

MCA - SEMESTER–III • EXAMINATION – WINTER 2013

Subject Code: 630004 Date: 11-12-2013

Subject Name: Operating System

Time: 02:30 pm TO 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)**		State whether the following statements are TRUE or FALSE and justify your answer.	
		I	Process can move from blocked state to running state in process transition.	**02**
		II	The size of page frames are equal in primary memory.	**02**
		III	Mutual Exclusion is needed when single resource is shared by more than one process simultaneously.	**02**
		IV	Long-term scheduler is responsible to dispatch the process for execution in processor.	**02**
		V	RAID is used for improvement of data transfer rate in between processor and primary memory.	**02**
Q.1	**(b)**	**I**	Who creates process and when process is created?	**02**
		II	What is virtual memory?	**02**
Q.2	**(a)**	**I**	Write a short note on algorithm of Readers/Writers problem using semaphore where readers have higher priority.	**03**
		II	Explain the term “Thrashing”.	**04**
	(b)	**I**	Briefly describe the three types of processor scheduling.	**04**
		II	What is the difference between preemptive and non-preemptive scheduling?	**03**
			OR	
	(b)	**I**	Explain the conditions for deadlock.	**03**
		II	How deadlock will be avoided?	**04**
Q.3	**(a)**	**I**	What is the difference between internal fragmentation and external fragmentation in memory management?	**04**
		II	What is the need of semaphore?	**03**
	(b)		List and briefly explain three file allocation methods.	**07**
			OR	
Q.3	**(a)**	**I**	What is the need of Disc Scheduling? Describe different Disc Scheduling policies in detail.	**07**
	(b)	**I**	What are the techniques for performing I/O?	**03**
		II	What is the functionality of DMA?	**04**
Q.4	**(a)**	**I**	What is middleware?	**03**
		II	Explain RPC in detail.	**04**
	(b)		Explain seven-state process model with all its transitions.	**07**

OR

Q.4	**(a)**		Explain the term "Clusters". What the benefits can be availed by using clusters?	**07**
Q.4	**(b)**	**I**	Explain different types of security threats.	**03**
		II	Explain three-tier client/server architecture.	**04**
Q.5	**(a)**	**I**	Explain the fetch policy, when a page should be brought in primary memory?	**04**
		II	What is the purpose of translation lookaside buffer?	**03**
	(b)		Explain User Level and kernel level threads.	**07**

OR

Q.5	**(a)**		What are the characteristics of RAID? Explain RAID Level 0 & RAID Level 1.	**07**
	(b)		What are the different approaches of Real-time scheduling?	**07**

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