Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–IV • EXAMINATION – SUMMER 2013

Subject Code: 140702 Date: 14-06-2013

Subject Name: Operating System

Time: 10:30am – 01:00pm 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 and explain following terms: (i) Authentication (ii) Mutual Exclusion (iii) Deadlock (iv) Segmentation	**08**
	(b)	List the types of operating systems and explain any one in detail	**06**
Q.2	**(a)**	Define Process. List the major events for creation of a process and explain them	**07**
	(b)	What is PCB? Discuss its major fields.	**07**
		OR	
	(b)	Draw process state diagram for THREE states and explain all states.	**07**
Q.3	**(a)**	Explain the classical thread model with its implementation strategies.	**07**
	(b)	Discuss the Peterson's solution for the race condition with algorithm.	**07**
		OR	
Q.3	**(a)**	What is Semaphore? How can we achieve the synchronization using semaphore for producer – consumer problem?	**07**
	(b)	Explain scheduling of process with shortest process next policy.	**07**
Q.4	**(a)**	Establish the necessity for memory management. Explain the memory management with the use of Linked Lists.	**07**
	(b)	How Resource Trajectories can be helpful in avoiding the deadlock?	**07**
		OR	
Q.4	**(a)**	Draw the block diagram for DMA. Explain the steps for DMA data transfer.	**07**
	(b)	Disk requests come in to the disk for cylinders 10, 22, 20, 2, 40, 6 and 38. A seek takes 6 msec per cylinder move. How much seek time is for Closest cylinder next algorithm? Initially arm is at cylinder 20.	**07**
Q.5		Attempt ANY FOUR	**14**
	(a)	Write a shell script to find greater number out of 3 numbers.	
	(b)	Write a note on Distributed Operating System.	
	(c)	How Access Control List can be useful for managing file access?	
	(d)	Advantages of LINUX/UNIX operating system over Windows.	
	(e)	NRU page replacement algorithm.	
	(f)	Short note on RAID.	

(g) Banker’s algorithm for a single resource.
(h) Short note on i- Node.

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