Seat No.: _____ *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – I • EXAMINATION – WINTER • 2014

Subject code: 2715402 **Date: 09-01-2015**

Subject Name: Real Time Operating System Fundamentals

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)**	Justify why superloop architecture is not used in real-time system development.	**07**
	(b)	Explain hard real time, soft real time and firm real time systems with suitable examples.	**07**
Q.2	**(a)**	ñKernel and Operating System are same.ò Justify the statement.	**07**
	(b)	Write in detail different services offered by Real Time Operating System.	**07**
		OR	
	(b)	What are the characteristics of a Real Time Operating System?	**07**
Q.3	**(a)**	Explain process/task control box in detail.	**07**
	(b)	Define and explain Cooperative multitasking, non-preemptive multitasking and preemptive multitasking.	**07**
		OR	
Q.3	**(a)**	Explain about process states and state transition.	**07**
	(b)	What is context switching? How does context switching affects RTOS efficiency?	**07**
Q.4	**(a)**	Explain Shortest job first scheduling and Priority based scheduling algorithms. Also discuss pros and cons of both.	**07**
	(b)	Explain Mailbox Communication.	**07**
		OR	
Q.4	**(a)**	Rate monotonic scheduling algorithm schedules task better than Earliest deadline first scheduling. Justify the statement.	**07**
	(b)	What is priority inversion problem? Explain with suitable example.	**07**
Q.5	**(a)**	Explain use of semaphore in process synchronization and process communication.	**07**
	(b)	How does race condition occur between processes? Explain with suitable example.	**07**
		OR	
Q.5	**(a)**	Explain reentrant function.	**07**
	(b)	Explain sleep and wakeup mechanism.	**07**

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