Seat No.: _____ *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – I • EXAMINATION – WINTER • 2013

Subject code: 715402N **Date: 26-12-2013**

Subject Name: Real Time Operating System

Time: 10.30 am – 01.00 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)**	Explain Real time OS principles and requirements.	**07**
	(b)	Explain Embedded System Architecture.	**07**
Q.2	**(a)**	Differentiate current and emerging Real Time OS.	**07**
	(b)	Explain Code and footprint optimization.	**07**
		OR	
	(b)	Explain Throughput and latency requirements.	**07**
Q.3	**(a)**	Explain Schedulers, tasks and processes and Memory management in Real Time OS.	**07**
	(b)	Explain the difference between FCFS and SJS scheduling.	**07**
		OR	
Q.3	**(a)**	Explain state transition diagram of Real Time OS.	**07**
	(b)	Explain Real time OS Application specific requirements.	**07**
Q.4	**(a)**	Explain mutual exclusion and race condition.	**07**
	(b)	i) Explain the goals of operating system services. ii) Explain the three alternative systems in three RTOS for responding a hardware source call with the diagram.	**07**
		OR	
Q.4	**(a)**	Explain detail about Memory allocation related functions.	**07**
	(b)	i) Name any two mailbox related functions. ii) Explain sending a message to queue function, Receiving a message from queue function and steps to destroy a message queue.	**07**
Q.5	**(a)**	Write about IPC in detail.	**07**
	(b)	How does an RTOS semaphore protect data? Explain by giving example.	**07**
		OR	
Q.5	**(a)**	i) Write about Interrupt Service Handling in RTOS. ii) Write about Semaphores with types in detail.	**07**
	(b)	Explain the RTOS programming tool MicroC/OS-II.	**07**

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