

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) ôKernel and Operating System are same.ô 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**
