

**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. **07**  
ii) Explain the three alternative systems in three RTOS for responding a hardware source call with the diagram.
- OR**
- Q.4** (a) Explain detail about Memory allocation related functions. **07**  
(b) i) Name any two mailbox related functions. **07**  
ii) Explain sending a message to queue function, Receiving a message from queue function and steps to destroy a message queue.
- 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. **07**  
ii) Write about Semaphores with types in detail.  
(b) Explain the RTOS programming tool MicroC/OS-II. **07**

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