

**Code No: B0604**

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD  
M.TECH II - SEMESTER EXAMINATIONS, APRIL/MAY 2012  
EMBEDDED AND REAL TIME SYSTEMS  
(DIGITAL SYSTEMS & COMPUTER ELECTRONICS)**

**Time: 3hours**

**Max. Marks: 60**

**Answer any five questions  
All questions carry equal marks**

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- 1.a) Write the classification of embedded systems. Explain its characteristics and features.
- b) Define microcontrollers, microprocessors and Application specific and general purpose processors.
  
- 2.a) Explain the architecture of Embedded Computing systems and its components.
- b) Illustrate the concept of pipelining with examples.
  
- 3.a) Illustrate the synchronous, iso-asynchronous and asynchronous communications with example for each.
- b) Briefly describe and compare UART and RS232C.
  
- 4.a) Define the following with examples.  
Hard and Soft real time systems
- b) Write about the interrupt service mechanism in RTOS.
  
- 5.a) Write a procedure to schedule the tasks in embedded computing systems.
- b) Write the functions of mailboxes in RTOS.
  
- 6.a) Describe the states in FSM for Automatic chocolate vending machine.
- b) Differentiate between tasks and task states.
  
- 7.a) Discuss the timer functions in RTOS.
- b) What are the uses OS functions at an RTOS kernel?
  
8. Write short notes on
  - a) RT Synthesis
  - b) Hardware and software Co-simulation.

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