

**IV B.Tech I Semester, Supplementary Examinations March 2009**  
**EMBEDDED AND REAL TIME SYSTEMS**  
**(Common to BME and ICE)**

**Time : 3 hours**

**Max. Marks: 80**

**Answer any five questions**  
**All questions carries equal marks**  
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1. (a) Explain for design approach of custom single purpose RT level processor with neat sketch.  
(b) Define the following relevant to embedded systems.
  - (i) Processor Technology.
  - (ii) IC Technology.
  - (iii) Design Technology. (8+8 = 16 Marks)
2. (a) Explain the basic architecture & operation of digital signal processor.  
(b) Explain the development environment of ASIPs. (8+8 = 16 Marks)
3. (a) Explain the concept of finite state mechanics with data path model.  
(b) Explain the communication & synchronization among processes in real-time systems. (8+8 = 16 Marks)
4. (a) What is communication interface? What are the various communication interfaces and their need?  
(b) With suitable example, Explain IEEE 1394 fire wire Protocol. (8+8 = 16 Marks)
5. Explain the architecture of the kernel, interrupt service routines, Semaphores & Mutex in connection with embedded RTOS. Draw the necessary diagrams. (16 Marks)

6. Define and explain the following related to embedded RTOS.

- (i) Message queues.
- (ii) Event register.
- (iii) Mail boxes.
- (iv) Pipes and signals.

(16 Marks)

7. (a) What are the various embedded operating systems available? Write notes on RT Linux.

(b) Explain the memory management organization of RTOS.

(8+8 = 16 Marks)

8. Write notes on the following in connection with embedded system design.

- (i) RT synthesis.
- (ii) Hardware / Software Co simulation.
- (iii) Hardware / Software Co Design.

(16 Marks)