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Seventh Semester B.E. Degree Examination, December 2010
Embedded Computing Systems

Time: 3 hrs.

Max. Marks:100

**Note: Answer any FIVE full questions, selecting
 at least TWO questions from each part.**

PART – A

- 1 a. What do you mean by system on chip (SOC)? With a neat block diagram, explain an embedded SOC in a mobile phone. (07 Marks)
- b. Define design metrics in an embedded system. What are the different competing design metrics? What are the challenges faced in designing an embedded system? (10 Marks)
- c. What is the role of ROM and RAM in an embedded system? (03 Marks)
- 2 a. Compare the advantages and disadvantages of data transfer, using serial and parallel ports/devices. (04 Marks)
- b. Explain three modes of serial communication using serial devices, with one example each. (08 Marks)
- c. Describe : i) UART ii) RS232C iii) SDIO (08 Marks)
- 3 a. Explain : i) Software timer ii) Watchdog timer iii) RTC (08 Marks)
- b. Explain the use of each control bit in I²C bus protocol. (05 Marks)
- c. Mention various wireless and mobile system protocols. Explain any two of them. (07 Marks)
- 4 a. Explain context switching, interrupt latency and interrupt service deadline. (10 Marks)
- b. How do the device driver functions and ISR functions differ? Explain. (05 Marks)
- c. What do you mean by throwing an exception? Explain. (05 Marks)

PART – B

- 5 a. What are the different programming models? With an example, explain the FSM model. (08 Marks)
- b. Explain the modeling of a multi processor system. (07 Marks)
- c. Define process and tasks. Explain the tasks with their states. (05 Marks)
- 6 a. Explain how processes are created and managed. (06 Marks)
- b. "Memory allocation and management are the most important functions of Kernel". Why? Explain the memory mapping strategy. (08 Marks)
- c. What is the importance of device management in an OS for an embedded system? (06 Marks)
- 7 a. What is RTOS? Explain the basic design of embedded system using RTOS. (06 Marks)
- b. Mention the various scheduling models. Explain the preemptive scheduling model. (10 Marks)
- c. What should be the OS security policy? Explain various important security functions. (04 Marks)
- 8 a. What is a target system? How is embedded software loaded into the target system? (06 Marks)
- b. Explain : i) Simulators ii) ICE. (10 Marks)
- c. Why do we use an host system for most of the developments? What are the testing steps at host machine? (04 Marks)

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