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**Seventh Semester B.E. Degree Examination, December 2012**  
**Embedded Computing Systems**

Time: 3 hrs.

Max. Marks:100

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

**PART – A**

- 1 a. Give the characteristics and constraints of embedded system. (04 Marks)
- b. Define design metrics in an embedded system. What are the different computing design metrics? What are the challenges faced in designing an embedded system. (10 Marks)
- c. Describe the software tools used for designing an embedded system. (06 Marks)
- 2 a. With neat sketch, explain synchronous serial input and synchronous serial output operation. (10 Marks)
- b. Briefly explain the skills required for an embedded system designer. (06 Marks)
- c. Write a note on SDIO (secure digital input output). (04 Marks)
- 3 a. Describe: i) Timing device; ii) Counting device; iii) Timer cum counting device. (06 Marks)
- b. Explain watch dog timer with any one its applications. (06 Marks)
- c. With neat sketch, explain the control bit format in I<sup>2</sup>C bus protocol. (08 Marks)
- 4 a. What is interrupt vector? Explain various mechanism of interrupt vector with suitable examples. (10 Marks)
- b. Differentiate between device driver functions and ISR functions. (05 Marks)
- c. Explain the role of device drivers in interaction with device hardware with suitable example. (05 Marks)

**PART – B**

- 5 a. Explain the modeling of a multi-processor system. (07 Marks)
- b. Distinguish between function, ISR and Task. (06 Marks)
- c. Define process and tasks. Explain the tasks with their states. (07 Marks)
- 6 a. Describe any four RTOS timer functions and the actions on calling these functions. (04 Marks)
- b. Explain file system organization and implementation in an OS for an embedded system. (08 Marks)
- c. Explain process creation and management of created process. (08 Marks)
- 7 a. Briefly explain the design principles when using an RTOS to design an embedded system. (10 Marks)
- b. List any four common RTOS task scheduling models. (04 Marks)
- c. Describe fixed real time scheduling model with an example. (06 Marks)
- 8 a. What are the features of integrated development environment (IDE)? Explain. (07 Marks)
- b. Describe the platform dependency issues and the need for appropriate OS-hardware interface functions. (08 Marks)
- c. Discuss the limitations of simulation with appropriate illustration. (05 Marks)

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