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**Seventh Semester B.E. Degree Examination, June/July 2011**  
**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. Define an embedded system. What are its main components? Classify the embedded systems. (08 Marks)
- b. A 10-bit ADC has reference voltages  $V_{ref-} = -1.024V$  and  $V_{ref+} = 1.023V$ . What will be the output when inputs are i)  $-0.256V$ , ii)  $0.512V$ , iii)  $2.047V$ . What will be the output for the above inputs when  $V_{ref-} = -1.024V$  and  $V_{ref+} = +2.047V$ ? (12 Marks)
- 2 a. List and explain any eight design metrics, used in embedded system. (08 Marks)
- b. Describe how the communication takes place between COM port and UART serial port by using handshaking signals. (06 Marks)
- c. How do you interface LCD controller through a parallel port? (06 Marks)
- 3 a. Describe the format of SDA bits in a I<sup>2</sup>C bus protocol along with its signals. (10 Marks)
- b. With a neat diagram, explain the Bluetooth protocol. (06 Marks)
- c. A 16-bit counter is getting input from an internal clock of 12 MHz. There is a prescaling unit, which prescales by a factor of 16. What is the time interval at which overflow interrupt occurs? (04 Marks)
- 4 a. Discuss the classification of interrupt sources. (06 Marks)
- b. Write a note on the Linux device drivers. (08 Marks)
- c. What is the use of interrupt vector table? Explain how it is used in 8051 in case of short code ISR. (06 Marks)

**PART – B**

- 5 a. Explain SDFG model. How do you unfold SDFGs into HSDFGs and HSDFGs into APEGs? (10 Marks)
- b. Describe the different states in FSM model for a mobile key '5' of T<sub>q</sub> keypad. (10 Marks)
- 6 a. Distinguish between ISRs and Tasks. (10 Marks)
- b. Explain the user and supervisory mode structure in OS. (04 Marks)
- c. What are the command functions, used in the device management? (06 Marks)
- 7 a. Discuss the round robin time scheduling, with its programming model and the graph for counter assignment (12 Marks)
- b. Which are the OS security issues? List the important security functions. (08 Marks)
- 8 a. Explain the various software tools, used in the embedded systems? (08 Marks)
- b. What is a target system? How does it differ from final embedded system? (06 Marks)
- c. How do you perform testing on the host machine? (06 Marks)