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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)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

