R07

Code: R7420402

B.Tech IV Year II Semester (R07) Supplementary Examinations, March/April 2013
EMBEDDED & REAL TIME SYSTEMS
(Common to ECE & EIE)

Time: 3 hours   Max. Marks: 80
Answer any FIVE questions
All questions carry equal marks

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1 (a) Explain why single purpose processors (hardware) and general purpose processors are essentially the same, and then describe how they differ in terms of design metrics.
   (b) Design a 2-bit comparator (compares 2-bit words) with single output "less-than" using the combinational design technique. Start from truth table, use K-maps to minimize logic, and draw the find circuit.

2 (a) Create a table listing the address spaces for the following address sizes,
      (i) 8-bit   (ii) 16-bit   (iii) 24-bit   (iv) 32-bit   (v) 64-bit
   (b) Discuss about application specific instruction set processors (ASIPS).

3 (a) Briefly describe three computational models commonly used to describe embedded systems and/or their peripherals.
   (b) Show how using the process create and join semantics one can emulate the procedure call semantics of a sequential programming model.

4 Explain about the following:
(i) RS 232
(ii) UART
(iii) USB
(iv) IEEE 802.11

5 Explain about:
(i) Task scheduler   (ii) Interrupt service routines   (iii) Semaphores

6 Explain about :
(i) Message queues   (ii) Signals

7 Write notes on:
(i) Priority inversion problem   (ii) Embedded Linux   (iii) RT Linux

8 (a) Describe each tool that has enabled the elevation of software design and hardware design to higher abstraction levels.
   (b) Show the correspondence of the three types of cores with Gajski's Y-chart.

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