

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

- 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 final 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.
