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M.Tech. Degree Examination, January 2011

Advanced Microcontrollers

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions.

- 1 a. Explain the trade-offs of a low power embedded systems with the of cortex MS. (10 Marks)
b. Describe von-Neumann architecture and Harvard architecture. Compare them with the help of a neat diagram. (10 Marks)
- 2 a. With a neat block diagram, explain the architecture of MSP 430. (12 Marks)
b. List and briefly explain the characteristics of MSP 430 microcontrollers. (08 Marks)
- 3 a. With the help of a neat block diagram, explain MSP 430 CPU. Also explain the functions of dedicated registers. (12 Marks)
b. Explain the 3 – core instruction with its format with emulation. (08 Marks)
- 4 a. Explain 16 bit WDT module, used as process or supervisor and internal timer. (10 Marks)
b. Describe low power operating modes, supported by the MSP 430 architecture. Explain the rules of thumb configuration of low power applications. (10 Marks)
- 5 With the help of a neat diagram, explain cortex M3. (20 Marks)
- 6 a. Explain the assemble language with basic syntax, unified assemble language and use of suffixes, with an example. (10 Marks)
b. Explain with a neat figure the priority levels of cortex M3, using 3 bit or 4 bit priority width, for exceptional programming. (10 Marks)
- 7 a. Explain the occurrence of interrupts or exception sequences in detail, with a neat diagram. (10 Marks)
b. Explain the functions associated with external interrupt, having several registers and interrupt processing. (10 Marks)
- 8 Write short notes on : (20 Marks)
 - a. Wireless sensor network and MSP 430
 - b. Pulse width modulation in power supplies
 - c. Interrupt sources in MSP 430
 - d. Frequency locked loop in MSP 430.

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