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10EC116

M.Tech. Degree Examination, December 2011
Advanced Microcontrollers (16 bit/32 bit)

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions.

- 1 a. Discuss the essential components of a microcontroller with a neat diagram. (10 Marks)
b. Describe the types of architectures used in a microcontroller. (06 Marks)
c. Differentiate between microprocessors and microcontrollers. (04 Marks)
- 2 a. Draw the functional block diagram and explain MSP 430 microcontroller. (12 Marks)
b. Write an assembly language program to light LEDs with a constant pattern. (08 Marks)
- 3 a. Describe the central processing unit of the MSP 430 microcontroller. (10 Marks)
b. What are the different addressing modes of a MSP 430 microcontroller? Explain with examples. (10 Marks)
- 4 a. Explain the instructions set of a MSP 430 microcontroller, with examples. (10 Marks)
b. With a neat block diagram, explain the clock system of MSP 430 microcontroller. (10 Marks)
- 5 a. Describe the basic timer – 1, with a neat block diagram. (10 Marks)
b. Explain the operation of Timer – A, with a block diagram. (10 Marks)
- 6 a. Describe the Cortex - M3, with a neat block diagram. (10 Marks)
b. Discuss the benefits and advantages of Cortex - M3. (10 Marks)
- 7 a. Give the overview of nested vector interrupt controller and explain its operation. (10 Marks)
b. Describe the advance programming features of Cortex - M3. (10 Marks)
- 8 Write short notes on any TWO :
a. Pulse width modulation in power supplies.
b. Wireless sensor networking with MSP 430.
c. Debug architecture of Cortex – M3.
d. Memory protection unit of Cortex – M3. (20 Marks)

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.

