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10EC74

### Seventh Semester B.E. Degree Examination, Dec.2015/Jan.2016

## Embedded System Design

Time: 3 hrs.

Max. Marks:100

Note: Answer FIVE full questions, selecting at least TWO questions from each part.

### PART - A

- 1
  - a. List out the differences between RISC and CISC architecture. (06 Marks)
  - b. Discuss the purpose of a Watch dog timer in an embedded application. (06 Marks)
  - c. Briefly describe the major elements of the embedded system development life cycle. (08 Marks)
- 2
  - a. What is meant by the arity of an instruction? Explain the terms one, two, three address instructions. (04 Marks)
  - b. What are the four major categories of execution flow through an embedded program? Briefly describe what each means. (08 Marks)
  - c. Explain RTN model for a microprocessor Datapath and memory Interface with neat diagram. (08 Marks)
- 3
  - a. Compare SRAM and DRAM. (04 Marks)
  - b. Explain the internal diagram of DRAM and write the timing diagram for read and write operation. (08 Marks)
  - c. Write a short note on memory Hierarchy (04 Marks)
  - d. Explain associative mapping cache implementation. (04 Marks)
- 4
  - a. Briefly explain V cycle model and spiral model. (10 Marks)
  - b. What are Five steps to a successful design? (04 Marks)
  - c. Explain system specifications versus system requirements. (06 Marks)

### PART - B

- 5
  - a. Explain Task state diagram. (05 Marks)
  - b. Differentiate between single thread and multi thread process. (05 Marks)
  - c. Explain Task control Block (TCB). (05 Marks)
  - d. What is a Foreground and Back ground systems? (05 Marks)
- 6
  - a. What is context switching? Describe the sequence of steps that are necessary to handle an occurrence of an interrupt. (06 Marks)
  - b. Explain Three kinds of stack. (06 Marks)
  - c. Describe virtual model and high level model for OS architectures. (08 Marks)
- 7
  - a. Explain Andahl's law. (04 Marks)
  - b. Write a 'c' function to determine the sum of the elements in an array and analyze it line by line for its time complexity. (06 Marks)
  - c. Explain Big - O notation. (05 Marks)
  - d. What are the different operations that can be performed on Arrays and linked list and also analyze the time complexity. (05 Marks)
- 8
  - a. Explain memory loading with equations and examples. (10 Marks)
  - b. Explain the trade tricks to optimize the code for performance improvement. (10 Marks)

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

