

USN

10R14TE091

10TE765

Seventh Semester B.E. Degree Examination, Dec.2017/Jan.2018
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. What is an embedded system? Explain briefly the various components in a microprocessor based embedded system with a block diagram. (10 Marks)
 b. With necessary block diagram, explain the embedded system life cycle. Mention the important steps in developing a embedded system. (10 Marks)
- 2 a. Compare Truncation and Rounding errors. Also analyze how errors propagate under addition and multiplication process. (10 Marks)
 b. Explain indexed mode and program counter relative addressing modes with diagram. Also write the timing diagram for serial and parallel write operation with an 8 bit register. (10 Marks)
- 3 a. With diagram, explain the operation of SRAM. With timing diagram explain read and write operation. (10 Marks)
 b. Explain Direct mapping cache implementation with diagram. (06 Marks)
 c. Explain dynamic memory allocation with its schemes. (04 Marks)
- 4 a. With diagram, briefly explain waterfall, Vcycle and spiral life cycle model. (10 Marks)
 b. Write a hardware architecture and data and counter flow diagram of a counter system and explain briefly. (10 Marks)

PART – B

- 5 a. Explain memory management at, (i) System level (ii) Process level. (08 Marks)
 b. Explain Kernel with the various types of services. (08 Marks)
 c. With diagram, explain Runtime stack and application stack. (04 Marks)
- 6 a. Explain Task control block with diagram. (08 Marks)
 b. Discuss virtual model and high level model for OS architectures with diagram. (08 Marks)
 c. Explain multithreaded OS. (04 Marks)
- 7 a. Explain Amdahl's law. Consider a system with the following characteristics: The task to be analyzed and improved currently executes in 100 time units, and the goal is to reduce execution time to 50 units. The algorithm to be improved uses 40 time units. Determine the unknown parameter and the inference. (10 Marks)
 b. Explain the 3 methods used to compute time loading. (10 Marks)
- 8 a. Explain memory loading with equation, figure and an example. (10 Marks)
 b. Explain the tricks of the trade and performance optimization. (10 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.

CMRIT LIBRARY
BANGALORE - 560 037