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Seventh Semester B.E. Degree Examination, Dec.2019/Jan.2020
Embedded System Design

Time: 3 hrs.

Max. Marks: 100

**Note: Answer any FIVE full questions, selecting
atleast TWO questions from each part.**

PART – A

- 1 a. With block diagram, explain the various components in a microprocessor based Embedded System. (08 Marks)
- b. With diagram, explain Embedded System life cycle. (08 Marks)
- c. Explain a scheme to interface Embedded system to external world using I/O portion of Von Neumann machine. (04 Marks)
- 2 a. Give the high level block diagram for a FSM and explain the concept. (05 Marks)
- b. With diagram, explain the DSP architecture used in Embedded System. (05 Marks)
- c. Explain different types of Execution flow of instruction in an Embedded System. (05 Marks)
- d. Give the timing diagram for register operations. (05 Marks)
- 3 a. Give the design for a $4k \times 16$ SRAM. (08 Marks)
- b. With block diagram, explain basic concepts of caching. (08 Marks)
- c. With diagram, explain Refresh Timing and Refresh address in DRAM. (04 Marks)
- 4 a. With diagram, explain the water fall model and V cycle model. (10 Marks)
- b. Explain Architectural design with the help of an example. (10 Marks)

PART – B

- 5 a. Explain the functions of an RTOS. (10 Marks)
- b. Explain the memory management scheme of an RTOS. (06 Marks)
- c. What is thread? Explain single process multiple threads. (04 Marks)
- 6 a. Explain Runtime stack, Application stack and Multiprocessing stacks. (06 Marks)
- b. Give the details of Task control block and explain. (04 Marks)
- c. Explain operating system virtual machine model and High level OS Architecture with the help of diagrams. (10 Marks)
- 7 a. With the help of memory map, explain memory loading. Also give the design of memory map. (08 Marks)
- b. Give methods to reduce response time and time loading. (08 Marks)
- c. Explain Hardware accelerators. (04 Marks)
- 8 a. Analyse the following basic flow control constructs:
(i) Constant time statements (ii) Looping constructs (iii) Conditional statements. (08 Marks)
- b. Explain the efficiency measures of an Embedded System. (08 Marks)
- c. Explain SMART cache. (04 Marks)

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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.