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10CS72

Seventh Semester B.E. Degree Examination, June/July 2015
Embedded Computing Systems

Time: 3 hrs.

Max. Marks: 100

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

PART – A

- 1 a. Define an embedded system. Explain the embedded system design process. (12 Marks)
b. Define digital command control (DCC). Explain the conceptual specification of a model train controller system. (08 Marks)
- 2 a. Explain the various data operations in ARM. (08 Marks)
b. Explain in detail the programming of I/O devices. (12 Marks)
- 3 a. Discuss memory interfacing and I/O interfacing in brief. (08 Marks)
b. What is DMA? Explain with a neat diagram. (06 Marks)
c. Explain briefly the development and debugging of an Alarm clock. (06 Marks)
- 4 a. Explain data flow and control/data flow graphs for programming models. (08 Marks)
b. List and explain different program optimization techniques. (12 Marks)

PART – B

- 5 a. Explain how threads and processes are used in RTOS. (10 Marks)
b. With a neat diagram, explain RTOS architecture. (05 Marks)
c. Define the following:
i) Task ii) Deadlock iii) Semaphore iv) Scheduler v) Remote procedure call (RPC). (05 Marks)
- 6 a. Explain Inter-process communication and synchronization with signals. (10 Marks)
b. List the different functional and non-functional requirements while choosing an RTOS. (10 Marks)
- 7 a. Define a distributed embedded system. Explain. (06 Marks)
b. Compare I²C bus and CAN bus over their use in embedded system. (10 Marks)
c. Describe the requirements for Elevator controller in brief. (04 Marks)
- 8 Write short notes on the following (5 marks each):
a. IDE
b. Pre-emptive scheduler
c. Simulator and emulator
d. Target system. (20 Marks)

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