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10CS72

Seventh Semester B.E. Degree Examination, May 2017 Embedded Computing Systems

Time: 3 hrs.

Max. Marks: 100

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

PART – A

- 1 a. What are the challenges in designing embedded computing systems? (04 Marks)
 b. Enumerate the requirements and specifications of GPS moving map and explain the same. (06 Marks)
 c. Draw the UML class diagram for the train controller and explain working of each subsystem in detail. (10 Marks)

- 2 a. What is an FIR filter? Write ARM assembly code for the FIR filter. (10 Marks)
 b. Explain priorities and vectors with respect to interrupts. (10 Marks)

- 3 a. Explain the four cycle hand shake bus protocol. (04 Marks)
 b. With a neat diagram, explain the DMA controller. (08 Marks)
 c. Draw the UML state diagram for scan keyboard and explain the same. (08 Marks)

- 4 a. For the following code in C, draw the data flow graph:
 $w = a + b;$
 $x_1 = a - c;$
 $y = x_1 + d;$
 $x_2 = a + c;$
 $z = y + c.$ (04 Marks)
 b. Write about the program optimization technique in detail. (10 Marks)
 c. Explain the operational working of software modem. (06 Marks)

PART – B

- 5 a. What is a Task Control Block (TCB)? Explain the salient features and structure of TCB. (06 Marks)
 b. Elicit the difference between memory management of general purpose kernel and real time kernel. (04 Marks)
 c. Explain the Round Robin (RR) process scheduling with interrupts. (10 Marks)

- 6 a. In a bus based system, how shared memory communication works? Explain in detail. (10 Marks)
 b. Explain in detail the operational working of the telephone answering machine. (10 Marks)

- 7 a. Explain the process of communication in distributed embedded system. (10 Marks)
 b. With a neat diagram, explain the I²C bus. (10 Marks)

- 8 a. Explain in detail the role of integrated development environment (IDE) for embedded software development. (10 Marks)
 b. During the cross compilation of an embedded C file what are the various files generated? Explain each of them in detail. (10 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.