CRASH COURSE

USN [ ][ ][ ][ ][ ][ ][ ][ ][ ][ ]   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 I^2C 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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