T2225A / T0545   EMBEDDED SYSTEMS

Q. P. Code: 09739

(3 hours)   Total Marks: 80

N.B.:   (1) Question No. 1 is compulsory.
           (2) Solve any three questions from remaining five questions.
           (3) Draw neat diagrams and assume suitable data wherever necessary. Justify your
               assumptions.

1.   Attempt any **four**:   20
    (a)   Differentiate between RISC and CISC architecture.
    (b)   Describe the addressing modes of ARM7 with example.
    (c)   Describe any two types of semaphore with diagram.
    (d)   Discuss the pipeline of ARM7 microcontroller.
    (e)   Describe the different addressing modes of 8051 microcontroller with example.

2. (a)   Draw the interfacing of 8051 with stepper motor. Also write the program to rotate   8
           stepper motor in clockwise direction.
    (b)   Describe the multitasking in RTOs.   6
    (c)   Draw and explain flag register of 8051.   6

3. (a)   Describe any two applications of MSP430 in medical and robotics.   12
    (b)   Draw the format for CPSR register. Also write the function of each bit.   8

4. (a)   Explain in detail external & internal memory organization of an 8051   12
           microcontroller.
    (b)   In Embedded C-programming there should be an optimization of speed/memory.   8
           Justify this statement.

5. (a)   Draw the interfacing of ARM7 with 4 LEDs. Also write a program to blink these   8
           LEDs.
    (b)   List the features of MSP430.   6
    (c)   Describe the how the deadlock occurs in RTOS with suitable example.   6

6. (a)   List any four data types with size, range and function.   4
    (b)   Draw the format for TMOD register with function of each bit.   5
    (c)   With suitable example describe the round Robin scheduling algorithm.   6
    (d)   Describe the design metrics of 8051 microcontroller.   5

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