T.E. SEM V / IT / CBGS / MAY 2017

Q.P. Code : 594401

(3 Hours)   [Total Marks: 80

N.B.:- (1) Question No. **1** is **Compulsory**.
      (2) Solve any **three** questions from the remaining **five** questions.
      (3) **Figures** to the **right** indicate **full** marks.
      (4) Make **suitable** assumptions wherever **necessary** and state them **clearly**.

1. (a) Define Embedded System. Explain classification of embedded system.   5
    (b) State the features of 8051 microcontroller.   5
    (c) Explain Semaphores and Mutex in RTOS.   5
    (d) Explain pipelining in ARM processor.   5

2. (a) Explain the Embedded System architecture in detail.   10
    (b) Explain the Timer/ Counter of IC 8051.   10

3. (a) Write an assembly language program for 8051 microcontroller to generate a square   10
        wave of 2KHz on pin 1.0 assuming crystal frequency of 12 MHz. Justify the mode of
        operation.
    (b) Explain the hardware and software interrupts of 8051 microcontroller.   10

4. (a) Explain the addressing modes of ARM 7 Processor   10
    (b) Explain the following instructions with suitable examples w.r.t ARM processor   10
          (i) BLX
          (ii) CMN
          (iii) SWP
          (iv) MVN
          (v) LDC

5. (a) Explain the various methods to implement interprocess communication.   10
    (b) Explain the addressing modes of 8051 microcontroller.   10

6.   Write note on (**any two**):   20
    (a) Battery operated smart card reader
    (b) Digital clock as an Embedded system
    (c) Serial communication of 8051
    (d) Assembler directives

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