Q.P. Code : 594400

(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) Assume **suitable** data where **necessary**.

1. (a) Define Embedded System. Explain application areas of embedded system. 5
   (b) Explain the pin configuration of 8051 microcontroller. 5
   (c) Compare AJMP, SJMP, LJMP instructions of 8051 5
   (d) Explain Real Time operating Systems and SoC in detail. 5

2. (a) Explain various Embedded microcontroller cores in detail. 10
   (b) Explain in detail ARM 7 pipelining 10

3. (a) Write an assembly language program for 8051 microcontroller to find and count the number of negative numbers from an array of signed numbers. 10
   (b) Explain the following SFR's of 8051: 10
      SCON, TCON, TMOD, PCON

4. (a) Explain addressing Modes of 8051 microcontroller. 10
   (b) Explain the following instructions with suitable examples w.r.t ARM processor 10
      (i) BX
      (ii) TEQ
      (iii) BIC
      (iv) BKPT
      (v) STC

5. (a) What is Semaphore? Explain the use of semaphore with respect to embedded systems. 10
   (b) Explain the architecture of 8051 microcontroller. 10

6. Write note on (**any two**): 20
   (a) Automated meter reading system
   (b) Digital clock as an Embedded system
   (c) 8051 Register Bank
   (d) Serial Port Communication in 8051