

(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. Discuss various components of embedded system. **5**
 (b) What is Semaphore? Explain the types of semaphore. **5**
 (c) Compare AJMP, SJMP, LJMP instructions of 8051. **5**
 (d) Explain the brief Real Time operating Systems **5**
2. (a) Explain in detail ARM 7 pipelining **10**
 (b) Explain the Timer/ Counter of IC 8051. **10**
3. (a) Write an assembly language program for 8051 microcontroller to multiply two 8 bit numbers stored external memory locations 4000H and 4001 H. Send the result on PORT 1 and PORT 3. **10**
 (b) Explain CPSR register of ARM 7 processor. **10**
4. (a) Explain the addressing modes of ARM 7 processor. **10**
 (b) Explain the hardware and software interrupts of 8051 microcontroller **10**
5. (a) Explain Internal memory organization of 8051. **10**
 (b) Explain the addressing modes of 8051 microcontroller. **10**
6. Write note on (**any two**): **20**
 (a) Automated meter reading system.
 (b) Digital Camera.
 (c) Serial communication of 8051.
 (d) Assembler directives.