

Q. P. Code : 23699

(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**.

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| 1. | (a) Define Embedded System. Discuss various components of embedded system. | 5 |
| | (b) What is Semaphore? Explain Mutex in RTOS. | 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. | |