Reg. No. : .....

Name : .....

Sixth Semester B.Tech. Degree Examination, May 2016
(2008 Scheme)
08.601 : MICROCONTROLLER BASED SYSTEM DESIGN (TA)

Time : 3 Hours Max. Marks : 100

PART – A

Answer **all** questions. **Each** question carry **4** marks.

1. Describe CPSR of ARM processor.
2. Interface 4K code ROM and 4K RAM to 8051.
3. Differentiate between :
   a) AJMP and LJMP
   b) RL A and RRC A
4. Explain the function of the following pins of 8051.
   a) ALE
   b) T0.
5. What are the pipeline stages in ARM 10 explain ?
6. Write notes on Cross assembler.
7. Compare Edge triggered and level triggered interrupts in 8051.
8. What is the difference between Thumb state and Arm state.
9. What do you meant by atomic operation ? Give an example.
10. Discuss any two methods to double the baud rate in 8051.

PART – B

Answer **any 2** questions from **each** Module. **Each** question carries **10** marks.

Module – 1

11. Explain the internal memory organization of 8051 with appropriate diagram.

12. What are the addressing modes of 8051 ? Explain with appropriate examples.

13. Write a Assembly level program to multiply largest and smallest element in a given array of 8 bit numbers.

Module – 2

14. A process automation system is based on 8051 μ C. If the Temperature measured is above 50°C, a message "HIGH" is to be send. Otherwise a message "NORMAL" is to be send. Write a program for the same. Write an assembly level program for the same (Assume the messages are burned into Code ROM and baud rate = 19200 at a XTAL = 11.0592 MHZ) include the interfacing circuit diagram.

15. What do you meant by vectored interrupts ? Write an assembly level program to generate a square wave of frequency 10 KHz at P1.0. With a signal applied to P3.2 as the input. (Assume a square wave of frequency 20 KHz is given to P3.2).

16. What are the various modes of operation of Timer 0 in 8051 ? Explain with appropriate diagram.

Module – 3

17. a) With block diagram explain briefly the internal of ARM7.

    b) Differentiate between :

        i) LDRSH and LDR

        ii) LDMDA and LDMIB with appropriate examples.

18. Write notes on :
    a) Debugger
    b) In circuit Emulator
    c) Software interrupts in ARM
    d) Thumb instructions.

19. a) Consider the following code segment in ARM assembly and fill the table :

Instruction	r0	r1	r2	r3
	0x00000000	0x00000001	0x0000000A	0x0000000F
ADD r0,r1,r2,LSL#4				
RSB r0, r1, r2, ASR #2				
MOVS r1, r0, ROR r2				
BIC r0,r1,r2				
TST r3,r0				

    b) Differentiate between LDR r0,[r1,#8]! and LDR r0,[r1],#8. Illustrate with appropriate examples.