Roll No. ..... Total Pages : 2

BT-7/D-20 **47012**

MICROCONTROLLERS

Paper - ECE-415 E

Time allowed : 3 Hours *Maximum Marks : 100*

Note : Attempt five questions in all selecting at least one question from each unit. All questions carry equal marks.

UNIT-I

1. (i) Using block diagram compare Microprocessor and Microcontroller. Discuss advantages and disadvantages of microcontrollers. 10

   (ii) Explain how RISC architecture improves the performance of a microcontroller? 5

   (iii) Explain why Harvard architecture is most preferred over Von Neumann architecture? 5

2. Discuss various features, uses and examples of 4 bit, 8 bit, 16 bit and 32 bit microcontrollers. 20

UNIT-II

3. Draw the architecture diagram of 8051 and explain its core features. 20

4. (i) Using suitable diagram explain how software / hardware control of timers works ? 10

(ii) Describe the operating modes of UART and its associated registers. 10

UNIT-III

5. Write an assembly language program for SUB, MUL, D1V, RRC and XOR instructions, the given 8 bit numbers are 95H and 10H. Write status of flags after execution of each program ? 4×5=20

6. (i) Explain the function of each flags bits of IE and IP registers in 8051MC. 10

(ii) Write an assembly language program to (a) clear accumulator then (b) add 3 to ACC 10 times. 5

(iii) (a) Program the IP register to assign the highest priority to TF1 (Timer 1 interrupt), then (b) discuss what happens if INT1, TF0 and TF1 are activated at the same time. 5

UNIT-IV

7. Interface ADC chip with the 8051 and write a program to take 10 samples of analog signal connected at input of the ADC. Take the sample every 1 second and store them at internal RAM addresses. 20

8. Interface a 16 key matrix keyboard and 8 LEDs with 8051 MC. Develop a program to detect the key pressed and key identification. The pressed key should be displayed on LEDs. 20