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

**BT-7/M-21** **47012**

# MICROCONTROLLERS

Paper–ECE-415E

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. (a) Discuss the differences between Microcontrollers and Microprocessors. 10

   (b) What are the advantages of using RISC core ? Explain in detail, how RISC core improve performance of CPU. 10

2. (a) Explain different ways of classifying the types of Microcontroller. 15

   (b) Justify the statement "Microcontrollers are true computer on chip". 5

## UNIT–II

3. Explain the following internal units of 8051 : 5×4=20

   (a) Register-A, PC & DPTR (b) PSW

   (c) RAM (d) Stack

   (f) Clock & Oscillator.

4. (a) Discuss the Interrupt control structure along with the Associated Control registers. 10

   (b) Explain External memory connection diagram along with its timing diagram. 10

## UNIT–III

5. (a) Write an Assembly program using two 8 bit numbers 30H and 16H for the following instructions :

   (i) MUL (ii) RLC

   (iii) SETB & CPL. 10

   Also compute the result and flags affected after the execution of Program.

(b) Write an Assembly program : 5×2=10

(i) add 3 five times to ACC.

(ii) to complement the ACC 800 times.

6. (a) Write an Assembly program to generate a square wave of 1KHz frequency on P2.2. Assume Crystal frequency = 11.0592 MHz. 10

(b) Write an Assembly program to load the value FFH into : 10

(i) Internal RAM addresses 10H to 15H.

(ii) Port P0 and P1 latch.

(iii) External RAM address 1000H.

## UNIT–IV

7. Explain the Operation, Programming and Interfacing diagram of ADC with 8051MC. 20

8. Design a system which contains a 16-key matrix keyboard and an 8 LEDs interfaced with 8051. Develop a program to detect the key press and key identification. The pressed key should be displayed on LEDs. 20