

Roll No. ....

Total Pages : 02

BT-7/D-18

37132

MICROCONTROLLERS AND EMBEDDED  
SYSTEM DESIGN  
ECE-401-N (Opt. I)

Time : Three Hours]

[Maximum Marks : 75

**Note :** Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

Unit I

1. (a) Define an Embedded System. What are the different ways to classifying the microcontrollers. Explain why is it important for a microcontroller to have a CPU ? 10
- (b) Explain why Harvard architecture most preferred over Princeton architecture ? 5
2. (a) Why most microprocessors and microcontrollers designs are based on RISC core ? Explain in detail the advantages of using RISC core. 5
- (b) Discuss design process of Digital Camera. 10

## Unit II

3. Explain in detail the following Internal units of 8051 MC :
- |               |                 |    |
|---------------|-----------------|----|
| (i) Registers | (ii) PSW        |    |
| (iii) RAM     | (iv) Oscillator | 15 |
| (v) Clock.    |                 |    |
4. Explain the meaning of each bit in TCON, TMOD, SCON and PCON registers of 8051 MC. 15

## Unit III

5. Write an assembly language program to add and subtract two 16-bit numbers 42E1H and 255CH. What will be the status of CY, AC and P flags after execution of program ? 15
6. Describe briefly architecture diagram and pipelining of PIC16C6X/7X microcontroller. 15

## Unit IV

7. Explain the operation, programming and interfacing diagram of DAC with 8051MC. 15
8. Interface a unipolar stepper motor with the 8051MC using a suitable driver circuit and write a program to rotate the stepper motor in clockwise direction using full-step sequence. 15