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 microcoprocessors 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
   (v) Clock. 15

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 substract 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

TOPPERWorld

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