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# 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**





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### 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 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**

### 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**



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