Sem IV / I.T. / 26-05-10 / microprocessors & microcontroller

Con. 3322–10. (REVISED COURSE) AN–3517

(3 Hours) [Total Marks : 100

N.B. : (1) Question No. **1** is **compulsory**.
(2) Attempt any **four** questions from the remaining.
(3) Assume **suitable** address and data if **necessary**.
(4) **Figures** to the **right** indicate **full** marks.

1. Design a 8086 based system with the following specifications : **20**

   a) 8086 processor working at 8 MHz.
   b) 64 KB EPROM using 27256 chips.
   c) 64 KB RAM using 62256 chips.
   d) Two 16 bit input and output ports in handshake mode.

   Draw the necessary interfacing diagram, memory map and I/O map. Use absolute decoding technique. Explain the design.

2. a) Explain the addressing modes of 8086 microprocessor with examples. **10**

   b) Write an 8086 based assembly language program to reverse the user entered string using macros. **10**

3. a) Explain the following instructions of 8086 with examples: **10**

   AAM, AAD, SCASB, CMPSB.

   b) Write an assembly language program for 8051 to generate a square wave of 2 KHz frequency on pin 1.2 . Assume crystal frequency 12 MHz. **7**

   c) Find the TH1 value needed to have the following baud rates: **3**

   1) 9600 2) 2400 3) 1200. Assume crystal frequency to be 11.0592 MHz.

4. a) Assume that the IE bit of 8051 for the serial interrupt is enabled. How this interrupt gets activated and explain its working upon activation. **8**

   b) Interface a 8 bit DAC with 8051 microcontroller. Write an assembly language program to generate a sine wave. Give the necessary comments. **12**

5. a) Explain the following SFR's of 8051: **8**

SCON, TCON, TMOD, PCON.

b) Interface a 4 pole Stepper motor with 8051 through 8255. Write an assembly language program to rotate it. Explain the control word used. **12**

6. a) Explain the register file structure and addressing modes of PIC micro-controller. **10**

b) Explain the Interrupts of 8051. State the purpose of ISR and IVT. **10**

7. Write short notes on any three:- **20**

a) Assembler directives.

b) 8051 register banks and Stack.

c) Architecture of PIC microcontroller.

d) Inter segment and Intra segment calls.
