S.E. (Computer Engg.) (Semester – II) Examination, 2010
MICROPROCESSORS AND INTERFACING TECHNIQUES
(2003 Course)

Time : 3 Hours Max. Marks : 100

Instructions: *1) Answer **three** questions from Section – **I** and **three** questions from Section – **II**.*
*2) Answers to the **two** Sections should be written in **separate** books.*
*3) **Neat** diagrams must be drawn **wherever** necessary.*
*4) Black figures to the **right** indicate **full** marks.*
*5) Assume suitable data, **if necessary**.*

SECTION – I

1. a) Draw and explain the minimum mode configuration of 8086 microprocessor. **8**

   b) Draw and explain write cycle timing diagram in maximum mode of 8086 microprocessor. **8**

OR

2. a) Explain briefly with the help of diagram how 8086 addresses memory as even and odd bank for
   1) even addressed byte
   2) odd addressed byte
   3) even addressed word
   4) odd addressed word. **8**

   b) Explain the difference between memory mapped I/O and I/O mapped I/O. **4**

   c) Explain how 20-bit physical address is obtained in 8086 microprocessor. **4**

3. a) Write a program in 8086 assembly language to find the number of positive, zero and negative numbers from a user fed array of ten numbers. **8**

b) What is an addressing mode ? Identify the addressing modes for the following instructions and explain each :

i) ADD AX [SI]

ii) MOV BL, NUM 1

iii) ROL BX, 1

iv) MOV AX, [BX] [SI]. **8**

OR

4. a) What do you mean by Assembler Directives ? Explain the following assembler directives with example :

i) Assume

ii) Extrn

iii) Far

iv) Segment. **8**

b) What is XLAT ? How will you use it to convert a BCD number to its ASCII equivalent ? **4**

c) Explain the difference between a macro and procedure. **4**

5. a) Draw a neat block diagram of 8259 PIC. Explain in brief the use of 8259. Also draw the flow chart for the initialization sequence of 8259. **10**

b) Explain type 0, 1, 2 interrupts found in interrupt vector table of 8086/8088 microprocessor. **8**

OR

6. a) Draw a block diagram of 8254 timer. Explain operation of 8254 in modes 1, 3 and 5 with the help of timing diagram. **12**

b) State and explain the functions of the following pins of 8254 :

i) CLK

ii) GATE

iii) AO, A1. **6**

SECTION – II

7. a) Explain mode O and BSR mode of 8255 with appropriate control word formats. **8**

b) With respect to IC 8279 explain :

i) Display modes

ii) Scanned keyboard with two key lockout. **8**

OR

8 . a) Draw a neat block diagram of 8251 USART and explain. **8**

b) What is DMA ? Explain different data transfer modes supported by 8237. **8**

9. a) Show a typical 8-bit ADC interface with 8086. Explain functionality of each signal used. **10**

b) Define following terms for D/A converters :

i) Resolution ii) Accuracy

iii) Conversion time. **6**

OR

10. a) Interface a stepper motor to 8086 microprocessor system and write an 8086 assembly language program to control the stepper motor. **8**

b) Write a note on Data Acquisition System. **8**

11. a) Explain TSR. Also explain the structure of TSR in detail. **8**

b) What are the components of MS-DOS ? Explain how MS-DOS gets loaded after power on with a neat diagram. **10**

OR

12. a) What is PSP ? Explain structure and usage of PSP. **10**

b) Differentiate between :

i) Internal Commands and External Commands

ii) DOS Calls and BIOS Calls. **8**
