Roll No. ..... Total Pages : 3

BT-5/D-20 **45010**

MICROPROCESSORS AND INTERFACING

Paper–ECE-311E

Time : Three Hours] [Maximum Marks : 100

Note : Attempt *five* questions in all, selecting at least *one* question from each section.

SECTION–I

1. (a) Explain in detail the functional block diagram of 8086 microprocessor and also explain the bit pattern of PSW format. (5)

(b) Explain the concept of Physical address generation in 8086 microprocessor. (15)

2. (a) Explain the operation of 8284 clock generator with the help of block diagram. (10)

(b) Explain the different control signals for 8086 while it is working in minimum and maximum mode. (10)

SECTION–II

3. (a) Explain the following instructions with an example for each:

(i) LEA

(ii) XCHG

(iii) XLAT

(iv) DAA

(v) AAA. (10)

(b) Compute the Physical address the following instructions will access If DS = 4000H, [BX] = 0100H, and [SI] = 6000H, [BP] = 1000H and [DI] = 2100H. Also explain the addressing modes that are used by each instruction.

a. MOV CX, [1234H]

b. MOV AX, [2222H]

c. MOV DX, [BX]

d. MOV DX, [BP+DI]

e. MOV DX, [BX + SI + 200H]

f. MOV DX, [BP + DI + 01H]

g. MOV AX, 1234H. (10)

4. (a) Write a 8086 ALP to convert a given binary number into its equivalent unpacked decimal and ASCII. (10)

(b) Draw the instruction format and generate the HEX codes for the following instructions :

(i) Mov Ax, [BP] [SI]

(ii) Mov Ax, [Cx]. (10)

SECTION–III

5. Generate the addressing for 8086 µp if 2 RAM chips of 32 K × 8 and 4 EEPROM chips of 32 K × 8 are to be interfaced with 8086 microprocessor? Draw the interfacing circuit required and explain the full decoding concept. (20)

6. (a) Draw and explain the signals and bus cycles in maximum mode system configuration of 8086 microprocessor. (10)

(b) List various memory devices. Explain memory bank selection in 8086 and mention the number of memory bank in 8086 microprocessor. (10)

SECTION–IV

7. (a) Interface an 8255 with 8086 at 80H as an I/O address of Port B. Interface five 7 segment displays with the 8255. Write an ALP to display 1, 2, 3, 4 and 5 over the 5 displays continuously as per their positions starting with 1 at the least significant position. (10)

(b) Explain with a neat diagram the interfacing of stepper motor to 8086 using 8255 in detail. (10)

8. (a) Interface an 8-bit DAC with an 8086 CPU running at 8 MHz and write an assembly language program to generate a sawtooth waveform of period 1 ms with V_{max} 8 V? (15)

(b) Explain structure of 8086 interrupt vector table with neat diagram. (5)