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

BT-4/M-13 **8404**

MICROPROCESSORS AND INTERFACING

Paper : ECE-216(E)

Time : Three Hours] [Maximum Marks : 100

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

SECTION–I

1. (a) Draw the pin configuration of 8085 microprocessor and explain the functions of all the pins in detail. 10
   (b) Draw and explain the timing diagram for the execution of instruction LSI rp, 16 bit data. 5
   (c) Explain how with external handware TRAP can be masked ? What are the different 8085 vectored interrupts and give the call locations for each interrupt ? Explain each of them. 5

2. (a) Explain the timing diagrams of 8085 when it is executing Memory mapped I/O and I/O mapped. 8
   (b) Design a fully decoded scheme for 32 k × 8 to interface chips of 2k × 8. Discuss loading considerations also. 8
   (c) Write an assembly language program for multiplying two 8-bit binary numbers, result 8-bit. 4

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UNIT–II

3. (a) Draw and explain the relevant pin diagram for 8086 microprocessor in Minimum and Maximum mode. 12
   (b) Draw and explain the timing diagram for an Output operation in MX mode of 8086. 8

4. (a) Write down the addressing modes for the following instructions and calculate the physical address for the same making use of the given data :
   Ax = fc39h, bx = 273 fh, cx = 000a, dx = 4c2c, si = 30bch, bp = 2000h, sp = 3000h, di = fc32h, cs = 4000h, ds = 7000h, es = 5000h, ss = 1000h, displacement = 0010h.
   (i) Mov al, bh; (ii) Mov bl, [bp]; (iii) Mov cx, [1234]; (iv) Mov dx, 1234h; (v) Mov cx, disp [si]; (vi) Mov al, [bx] [di]; (vii) mov cx, disp [bx] [si]. 12
   (b) Generate HEX codes for the following instructions :
   Mov SS:0F246H [BP], Dx
   Mov [0874], Cx 8

UNIT–III

5. (a) Interface DAC with an 8086 microprocessor running at 10 MHz speed and write an ALP to generate a saw tooth waveform of period 5 ms with V_{max} 2 V. 10
   (b) Configure port A in bidirectional mode and port B in input mode. Draw the CWR and BSR. Also write an assembly language program for the same. 10

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6. (a) Interface a 4*4 keyboard with 8086 using 8255 and write ALP for detecting a key closure and return the key code in AL. The debouncing period for key is 20 ms. 12

(b) Write a program to find out any power of a number such that $Z = X^N$, where N is programmable and X is a unsigned number. http://www.kuonline.in 8

UNIT–IV

7. (a) Write down the steps involved when an interrupt INT 88h is encountered in the main program, and calculate address of ISR for this interrupt. 5

(b) Describe the interrupt vector table of 8086 microprocessor. Discuss the various sources of interrupt in 8086. 7

(c) Draw the block diagram of 8237 chip and discuss its command word. 8

8. Explain briefly the following :

(i) 8259 Chip. 8

(ii) Pipelining. 6

(iii) Assembler Directives. 6
