[3762]-206

S.E. (Comp. Engg.) (II Sem.) EXAMINATION, 2010

MICROPROCESSOR AND INTERFACING TECHNIQUES

(2008 COURSE)

Time : Three Hours   **Maximum Marks : 100**

N.B. :— (i) Answer *three* questions from Section **I** and *three* questions from Section **II**.

(ii) Answers to the two Sections should be written in separate answer-books.

(iii) Neat diagrams must be drawn wherever necessary.

(iv) Use of logarithmic tables, slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.

(v) Assume suitable data, if necessary.

SECTION I

1. (a) Draw and explain internal architecture block diagram of 8086 μp.   [10]

(b) Explain even and odd memory banks along with $\overline{BHE}$ and AO signals of 8086 μp.   [6]

Or

2. (a) Explain Memory Read Cycle in minimum mode of 8086 µp using timing diagram. [6]

(b) How is Logical address converted into Physical address ? Explain with suitable examples. [6]

(c) Differentiate between I/O mapped I/O and memory mapped I/O. [4]

3. (a) What is an addressing mode ? Explain the following addressing modes with suitable examples :

(i) Indirect addressing mode

(ii) Implicit addressing mode

(iii) Immediate addressing mode. [8]

(b) Write an ALP for converting 4 digit BCD number into its equivalent HEX. Accept BCD input from user and display result on console. Write appropriate comments. [8]

Or

4. (a) Explain the following Assembler directives :

(i) MODEL

(ii) ENDP and ENDM

(iii) EXTRN

(iv) PTR. [8]

(b) Differentiate between Macro and Procedure.   [4]

(c) Explain the following instructions of 8086 µp (any *two*) :

    (i) PUSH

    (ii) STOSB

    (iii) DAA.   [4]

5. (a) Explain the following terms w.r.t. interrupts of 8086 µp :

    (i) H/W and S/W Interrupt

    (ii) Interrupt Service Routine (ISR)

    (iii) Interrupt Vector

    (iv) Interrupt Vector Table (IVT).

    Explain interrupt handling procedure of 8086 µp.   [12]

(b) Explain internal architecture of DOS.   [6]

Or

6. (a) Draw and explain block diagram of 8259 PIC.   [8]

(b) Explain loading of DOS (Booting Process).   [6]

(c) Differentiate between ·EXE and ·COM files.   [4]

SECTION II

7. (a) Explain control word of 8255 for I/O mode and BSR mode. Consider the following addresses for PA = 30h, PB = 31h, PC = 32h, CWR = 33h. Write a set of instructions to set PC0 and PC2 using BSR mode. [10]

(b) Draw and explain block diagram of 8251 (USART). [8]

Or

8. (a) Explain MODE word and CONTROL word of 8251 (USART). [8]

(b) Explain the working of LVDT with the help of a neat diagram. [6]

(c) Explain R-2R ladder technique of D/A conversion. [4]

9. (a) Draw and explain block diagram of 8279 (keyboard and display controller). [8]

(b) Explain mode 'O' of 8253 with suitable timing diagram. Explain Read Back Command of 8254. [8]

Or

10. (a) Explain the following command words of 8279 (any *two*) :

(i) Keyboard and display mode set

(ii) Write display RAM

(iii) Display Write Inhibit/Blanking. [4]

(b) Draw and explain CWR of 8253/54. Write a program to initialise CNT2 in MODE-1, BCD counter with initial counter value 4567. Assume addresses as follow :

CNT0 = 30h, CNT1 = 31h, CNT2 = 32h, CWR = 33h. [6]

(c) Explain working of DMA controller with suitable diagram. [6]

11. (a) Draw and explain minimum mode configuration of 8086 µp. [8]

(b) Explain working of stack of 8087 (NDP). [4]

(c) Explain the following instructions of NDP (any *two*) :

  (i) FMUL

  (ii) FBSTP

  (iii) FILD. [4]

Or

12. (a) Draw and explain maximum mode configuration of 8086 µp. [8]

(b) Interface 8255 (PPI) with 8086 µp in minimum mode. Draw interfacing diagram and mention address map for 8255. [8]