Total No. of Questions—**12**] [Total No. of Printed Pages—**4**

**[3562]-206**

**S.E. (Comp.) EXAMINATION, 2009**

**MICROPROCESSOR AND INTERFACING TECHNIQUES**

**(2003 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*) Figures to the right indicate full marks.

(*v*) Assume suitable data, if necessary.

## SECTION I

**1.** (*a*) Draw and explain functional block diagram of the 8086 microprocessor. [8]

(*b*) Explain the flags register with instructions affecting the flags. [6]

(*c*) Give the reset address of 8086 microprocessor. [2]

*Or*

**2.** (*a*) Draw and explain the right cycle timing diagram of 8086 microprocessor in minimum mode. [8]

P.T.O.

(*b*) Give comparison between memory mapped I/O and I/O mapped I/O. [8]

**3.** (*a*) Write an assembly language program in 8086 to convert string of characters from upper case to lower case. Accept the string of lengths and character from user. Write appropriate comments. [8]

(*b*) Explain the various addressing modes of 8086 microprocessor with *one* example each. [8]

*Or*

**4.** (*a*) Write an assembly language program in 8086 for HEX-TO-BCD conversion of 16-bit number. Write appropriate comments. [10]

(*b*) Explain the following assembler directives :

(*i*) EXTRN

(*ii*) .MODEL SMALL

(*iii*) PROC

(*iv*) PUBLIC [6]

**5.** (*a*) Draw and explain block diagram of 8259. [10]

(*b*) Write an initialization instruction for 8259 PIC for the following specifications :

(*i*) Interrupt type 32

(*ii*) Edge triggered, single and $ICW_4$ needed

(*iii*) Mask interrupts IR1 and IR3. [8]

*Or*

**6.** (*a*) Draw and explain the functional block diagram of 8253/54. Give the control word format for 8253. [10]

(*b*) What are the different modes of operation of 8253 timer ? Explain mode 2 and mode 4 with waveforms. [8]

## SECTION II

**7.** (*a*) Draw a block diagram of 8255 PPI and explain in brief. [8]

(*b*) Explain BSR and I/O mode word formats of the 8255 PPI. Write a BSR control word subroutine to set bits PC7 and PC3 and reset them after 10 msec. Assume that a delay subroutine is available. Address for control word register = 83 H. [8]

*Or*

**8.** (*a*) Draw and explain functional block diagram of 8279. [8]

(*b*) Compare asynchronous serial communication with synchronous communication. Draw the command instruction format of 8251 and explain it. [8]

**9.** (*a*) Interface a typical 8-bit DAC with 8255 and write a program to generate triangular waveform of period 10 ms. The CPU runs at 5 MHz clock frequency. [8]

(*b*) Explain the performance parameters of ADC. List the features of ADC 0808. [8]

*Or*

**10.** (*a*) Explain the working of LVDT with the help of a neat diagram. [8]

(*b*) Discuss the different types of force and pressure transducers. [8]

**11.** (*a*) How does a TSR program differ from a typical .com program. [8]

(*b*) What are the different components of MS-DOS ? With the help of neat diagram, explain, how MS-DOS gets loaded. [10]

*Or*

**12.** (*a*) Write a TSR to activate beep sound when any key is pressed. Add appropriate comments. [10]

(*b*) Draw and explain the structure of PSP. [8]