Total No. of Questions—**12**] [Total No. of Printed Pages—**4+1**

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S.E. (Comp. Engg.) (II Sem.) 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*) Figures to the right indicate full marks.

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

SECTION I

1. (*a*) Draw and discuss a typical minimum mode of 8086 system. How does it differ from 8088 in minimum mode ? [8]

(*b*) Explain with a neat diagram of memory segmentation in the 8086 microprocessor. [6]

(*c*) Explain the function of ALE and $\overline{\text{BHE}}$/S7 pins of 8086 microprocessor. [2]

P.T.O.

Or

2. Design an 8086 based system with the following specifications :

(*i*) 8086 in minimum mode

(*ii*) 64 kbyte EPROM

(*iii*) 64 kbyte RAM

Draw the complete schematic of the design indicating address map. [16]

3. (*a*) Write a program in 8086 Assembly language for palindrome checking. Write appropriate comments. [8]

(*b*) Recognize the addressing modes of the following instructions and explain each : [8]

(*i*) MOV AH, 50 N

(*ii*) MOV AH, [BP + 2]

(*iii*) MOV AH, [BP + SI]

(*iv*) MOV AH, TEMP[BX]

where TEMP defines a memory location.

Or

4. (*a*) What is assembler directives ? Explain in brief the following assembler directives : [8]

(*i*) ENDS

(*ii*) EXTERN

(*iii*) NEAR

(*iv*) FAR

(*b*) Explain the use of PUSH and POP instruction in 8086 with example. [6]

(*c*) Explain the difference between arithmetic shift and logical shift. [2]

5. (*a*) Draw and explain command/control words of 8259 PIC. What is master-slave configuration ? How many number of slaves can be connected to a master ? [10]

(*b*) Explain operation of 8254 in mode 1 and mode 3 with the help of timing diagram. [8]

Or

6. (*a*) Draw and explain block diagram of 8254. How does 8254 differ from 8253 ? [10]

(*b*) Give the control word format for 8253/54. Write a program to initialize counter 2 in mode 0 with a count of C030H. Assume address for control word register = 0BH, counter 0 = 08H, counter 1 = 09H and counter 2 = 0AH. [8]

SECTION II

7. (*a*) Explain mode 0 and BSR mode of 8255 with appropriate control word formats. [8]

(*b*) With respect to 8279IC explain : [8]

(*i*) Display modes

(*ii*) Scanned key-board mode with two key-lockout.

Or

8. (*a*) Draw and explain functional block diagram of 8251. [10]

(*b*) Differentiate between synchronous and asynchronous serial communication. [6]

9. (*a*) Explain in detail the sources of errors in DAC. [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 different types of force and pressure transducers. [8]

11. (*a*) Draw and explain the structure of PSP. [10]

(*b*) Explain the difference between DOS calls and BIOS calls. [8]

Or

12. (*a*) What is TSR ? Explain the structure of TSR in detail. How does TSR differ from typical ".com" program ? [10]

(*b*) Write a TSR to activate beep sound when any key is pressed. [8]