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

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S.E. (Comp.) (Second Semester) EXAMINATION, 2010

MICROPROCESSORS 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*) 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 with a neat diagram of memory segmentation in the 8086 microprocessor. [8]

Or

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

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

P.T.O.

(c) Explain the use of the following signals of 8086 microprocessor : [2]

(i) MN/$\overline{MX}$

(ii) DT/$\overline{R}$

3. (a) If

(BX) = 0158H Displacement = 1B57H

(DI) = 10ASH (DS) = 2100H

and DS is used as segment register, then calculate EA and PA for the following addressing modes : [8]

(i) Register addressing mode

(ii) Register indirect, assuming DI

(iii) Based indexed, assuming register BX and DI

(iv) Relative based indexed addressing, asuming BX and DI.

(b) Write an 8086 assembly language program for BCD to seven segment code conversion. Use XLAT instruction and common cathode display. Write appropriate comments. [8]

Or

4. (a) Explain the following instructions for 8086 : [8]

(i) CMPS

(ii) MOVSB/MOVSW

(iii) SCAS

(iv) STOS/LODS

(*b*) Explain the difference between near and far procedure of 8086 microprocessor. [4]

(*c*) Explain the stack structure of 8086 in detail. [4]

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

(*b*) What is interrupt vector table of 8086 ? Explain its structure. [8]

Or

6. (*a*) Explain the command words/control words of 8259 in detail. [10]

(*b*) Write an initialization sequence for 8259 PIC for the following specifications : [8]

(*i*) Interrupt type 32

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

(*iii*) Mask interrupts IR1 and IR3

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 = 83H. [8]

Or

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

(*b*) Define the following terms for D/A conversion : [8]

(*i*) Resolution

(*ii*) Accuracy

(*iii*) Monotonicity

(*iv*) Conversion time.

9. (*a*) Draw and explain the following 8279 commands : [8]

(*i*) Keyboard/display mode set command

(*ii*) Read FIFO/sensor RAM command.

(*b*) Draw and explain the functional block diagram of 8253/54. [8]

Or

10. (*a*) 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]

(*b*) Explain the necessity of 8237 DMA controller. List the features of 8237 DMA controller. [8]

11. (*a*) Draw the maximum mode module of 8086 clearly showing address latches, transreceivers and clock generator. [10]

(*b*) Explain the data format for 8087 NDP in brief. [8]

Or

12. (*a*) Draw and explain the architecture of 8087 NDP. [10]

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