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BT-5 / D-19

MICROPROCESSORS AND INTERFACING

Paper–ECE-311E

Time allowed : 3 hours] *[Maximum marks : 100*

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

Section–I

1. (a) Draw & explain the relevant pin diagram for 8086 in minimum mode? 15

   (b) How the 20 bit effective address is calculated in 8086 processor? 5

2. (a) Explain the function of opcode pre-fetch queue in 8086? 5

   (b) Explain the internal hardware architecture of 8086 microprocessor with a neat diagram. 15

Section–II

3. (a) Describe the following instructions with an example: 12

   (i) LDS

   (ii) DIV

   (iii) LAHF

   (iv) MUL

   (v) PUSHF

   (vi) TEST

[Turn over

(b) Draw the instruction format and generate the HEX codes for the following instructions: 8

(i) Mov CX, [Bx] [SI] 4000h

(ii) Mov Ax, [CX]

4. (a) Write an ALP using 8086 instructions to search a number placed in location array ARRAY. Give suitable messages. 10

(b) What do you mean by segment override prefix? Explain the following assembler directives: 10

(i) ASSUME

(ii) SMALL

(iii) PROC

(iv) EQU

(v) LOCAL

Section-III

5. (a) Interface 8KX8 ROM and 4KX 8 RAM to 8086 microprocessors. Assume the starting address for ROM is 40000H and starting address for RAM is 44000H. 15

(b) How 8086 microprocessors select 8 bit or 16- bit data from odd and even memory banks? 5

6. (a) How is 8086 configured in minimum mode? Explain. Draw and explain the signals and bus cycles in maximum mode system configuration of 8086 microprocessor? 10

(b) Design an 8086-based system with the following specifications: 10

(i) 64K byte EPROM; (ii) 64K byte RAM. Draw the complete schematic diagram of the design indicating memory map.

Section-IV

7. (a) Interface 8 digit seven segment LED display to 8088 through 8255 PPI. Write initialization sequence for 8255 with all ports as Output ports in mode 0 and address of device is FF00h. 10

(b) Explain the interfacing of any 8 bit A/D converter with an 8086 microprocessor. Write an assembly language program for conversion. 10

8. (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 20ms. 15

(b) Draw and discuss the Interrupt structure of 8086. 5

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