

Con. 2800-09. Microprocessors & microcontrollers VR-5100
(REVISED COURSE)

(3 Hours)

[Total Marks : 100]

- N.B.: (1) Question No. 1 is compulsory.
(2) Attempt any four questions from remaining.

1. (a) Write 8086 assembly language program to compute 15

$$Z = \sum_{i=1}^N X_i * Y_i$$

Assume : N = 5

 X_i and Y_i are signed 8 bit numbers.

- (b) Explain Interrupts of 8051 (8 bit) Microcontroller. 5
2. (a) Design 8086 based (min mode) system 10
(i) 24 Kbyte EPROM
(ii) 24 Kbyte RAM
(iii) Two 16 bit I/O ports Using 8255 in memory mapped I/O scheme.
- (b) Write ALP for 8051 Microcontroller to find out how many Negative bytes in given series of Ten bytes. 10

3. (a) Design 8051 based Microcontroller system with following details : 10
(i) External program memory 12 Kbyte
(ii) Data memory 12 Kbyte
(iii) Eight ON/OFF switches
(iv) Eight LED.

and write ALP to display status of switches on LED bank.

- (b) Draw and Explain Maximum mode configuration of 8086 Microprocessor. 10
4. (a) 8086 based Multiprocessing system. Explain various configurations with suitable flow charts. 10
- (b) Draw Timing diagram for min mode of 8086 10
(i) Read Bus Cycle
(ii) Write Bus Cycle.

5. (a) Explain Branch related addressing modes of 8086 with examples. 10
(b) Draw interfacing diagram of 8086-8087 and write ALP using 8087 instruction for calculate area of a circle. 10

6. (a) Draw Timer/counter control logic and Explain T_{CON} and T_{Mod} SFR in detail. 10
(b) Explain the following Instructions : 10

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|----------------------|---|--------------|
| (i) MOVC A, @ A + PC | } | 8051 μ C |
| (ii) AJMP Addr | | |
| (iii) LES BX, [SI] | } | 8080 μ P |
| (iv) XLAT | | |
| (v) FSQRT | | |

7. Write short notes on :—

- (a) Mixed language programming
- (b) Assembler directives and Operators
- (c) RS-232C Bus Standard.

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