

Roll No.

Total Pages : 03

BT-5/D-23

45168

MICROPROCESSOR AND INTERFACING
ES-301A

Time : Three Hours]

[Maximum Marks : 75

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

Unit I

1. (a). Describe the internal architecture of 8086 microprocessor with neat block diagram. 10
(b) Express how the physical address generated in 8086. 5
2. (a) Examine all the signals available in the 8086 processor. 8
(b) How is the clock signal generated for 8086 ? Explain in detail. 7

Unit II

3. (a) Describe the maximum mode configuration of 8086 with a neat diagram. Mention the functions of various signals. 7

- (b) For the given clock, draw the timing diagram for Read and write cycle in minimum mode operation and explain. 8
4. (a) Interface the 8086 microprocessor with two $8K \times 8$ EPROM chips and two $8K \times 8$ RAM chips. Draw the necessary block diagram showing the interfacing of the memory with 8086. 10
- (b) Give the cell structures of PROM and E²PROM memories. 5

Unit III

5. (a) Define addressing mode. Describe in detail about each addressing mode with an example. 7
- (b) Mention an example for the 8086 instructions : 8
AAA, CWD, JNBE, LAHF, MOVS, RCL, ROL, SAHF
6. (a) Generate the HEX codes for the following instructions : 8
- (i) Mov AX, BX
- (ii) Mov AX, [BX] [SI].
- (b) Write an assembly language program to search data in an array using 8086 instruction set. 7

Unit IV

7. (a) Draw the complete interfacing diagram for interfacing an 8-bit channel A/D Converter like ADC 0808/0809 to an 8086 CPU. Test a sample, one at a time from each channel of analog inputs and display it at a special display port & wait for 2 seconds for each channel. 8
- (b) Describe the 8255 programmable peripheral interface and its operating modes. What is the purpose of control word used in 8255 ? 7
8. (a) Interface a typical 12-bit DAC with 8255 and write a program to generate a triangular waveform of period 12 ms. The CPU runs at 4 MHz clock frequency. 8
- (b) Describe the internal architectural diagram of the 8237 and explain how it functions as a DMA controller. 7