

**N.B. :** (1) Question No. 1 is **compulsory**.

(2) Answer any **four** questions from the remaining **six** questions.

1. Design an 8085 based microcomputer system with the following specifications : 20
- (a) CPU working at 3 MHz.
  - (b) 8 KB RAM using 2 KB devices
  - (c) 2 KB EPROM using 1 KB devices
  - (d) Two 8-bit ports in I/O mapped I/O using 8255 PPI
  - (e) One 8259.

Design the circuit and clearly show the memory and I/O maps.

2. (a) With the help of a neat diagram explain the architecture of 8085 microprocessor. 10  
(b) Explain the addressing modes of 8085 with examples. 10

3. (a) Explain the different operating modes of 8255. Explain the bidirectional mode in details. 10  
(b) Explain I/O mapped I/O and memory mapped I/O. 10

4. (a) Explain the software and hardware interrupts of 8085. 10  
(b) Draw and explain the timing diagram for MVI A, 32H for 8085 microprocessor. 10

5. (a) Draw the functional block diagram of 8259 PIC and explain the working of each block. 10  
(b) Briefly explain ICW's and OCW's of 8259 PIC. 10

6. (a) What are subroutines ? Explain in details the instructions used with subroutines and their working. 10  
(b) Explain the 8254 with the help of its block diagram. What are its different modes of operation ? 10

7. Write short notes on the following :- 20
- (a) Modes of 8237 DMA Controller
  - (b) Re-entrant and re-cursive subroutines
  - (c) Software delay routines
  - (d) Flags of 8085.