

- N.B. : (1) Question No. 1 is **compulsory**.  
(2) Attempt any **four** questions out of remaining **six** questions.  
(3) Assume **suitable** data wherever **required** but justify them.  
(4) **Figures** to the **right** indicate **full** marks.

1. (a) Design a 8086 based microprocessor system with following specifications :- 12
  - (i) 8086 microprocessor working at 8 MHz.
  - (ii) 32 KB of EPROM using 16 KB devices.
  - (iii) 64 KB of SRAM using 16 KB devices.Explain the design and show the memory map.
- (b) Explain with neat diagram the 16-bit memory interface (Odd and even 8-bit memory banks) of the 8086 microprocessor. 8
2. (a) Write a 8086 program that displays the binary powers of 2 (in decimal) on the video screen for the powers 0 through 7. Your display shows  $2^n =$  value for each power of 2. 10
- (b) Explain and draw the internal structure of the 80 x 87 arithmetic coprocessor. 10
3. (a) Explain and draw the control word format for the 8254 timer. 10
- (b) Explain the block diagram of 8255A and explain its BSR mode. 10
4. (a) Explain in brief with one example the function of following instructions :- 10
  - (i) AAS
  - (ii) SCAS
  - (iii) INTO
  - (iv) FSQRT
  - (v) TEST
- (b) Explain various data transfer modes supported by 8237 DMA controller. 10
5. (a) Write an Assembly Language Program (8086 program) to exchange the blocks of 1 KB located at 0100 H and 0200 H, using string instructions. 10
- (b) What do you mean by Bus arbitration ? When it is required ? Explain different types of arbitration scheme. 10
6. (a) Explain Cascading of three 8259 A PICs using master slave configuration. 10
- (b) Differentiate between :- 10
  - (i) Procedure and Macro
  - (ii) Minimum mode and maximum mode of 8086.
7. (a) Discuss the control and status word format of Numeric coprocessor 8087. 10
- (b) What do you mean by multiprocessor system ? Explain the different multiprocessor configurations supported by 8086 ? 10