

- 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**