



- Notes :
1. All questions carry marks as indicated.
 2. Solve Question 1 OR Questions No. 2.
 3. Solve Question 3 OR Questions No. 4.
 4. Solve Question 5 OR Questions No. 6.
 5. Solve Question 7 OR Questions No. 8.
 6. Solve Question 9 OR Questions No. 10.
 7. Solve Question 11 OR Questions No. 12.
 8. Assume suitable data whenever necessary.
 9. Illustrate your answers whenever necessary with the help of neat sketches.

1. a) Draw & explain internal architecture of 8086 microprocessor. Also explain the importance of sigma unit. 9
 b) If SS register contains 2345 H, the CS register contains 5678 H, the IP register contains 1000 H & the SP register contains 2000 H, what is the address of next instruction? what is the address of next stack operation? 4
- OR**
2. a) Explain the function of following pin. 8
 i) MN / \overline{MX}
 ii) DT / \overline{R}
 iii) READY
 iv) HOLD
 b) Explain the concept of segmented memory? What are its advantages? 5
3. a) What do you mean by addressing mode? explain the addressing modes of 8086 with example. 8
 b) What are the operations performed by data transfer instructions? List the data transfer instruction. 5
- OR**
4. a) Explain the following instruction. 10
 i) XCHG AL, BL
 ii) LEA SI, data
 iii) ADC AX, BX
 iv) MVL BL
 v) CMP AL, BL
 b) Write 8086 assembly language program to multiply two 16 bit numbers. 3
 (Assume number present in AX & BX register)

5. a) Draw & explain the conditional & control flags of 8086. 8
- b) Write an 8086 assembly language program to find out smallest number from array of 10 bytes present in data memory segment. 6
- OR**
6. a) Write 8086 assembly language program to arrange the 10 bytes of data present in data memory segment in ascending order. 6
- b) Explain the following instructions. 8
- i) XOR AL, BL
- ii) SAR AL, DI
- iii) RCL AL, 01
- iv) JC 16-bit address
7. a) Explain in detail the following instructions. 5
- i) PUSH CX
- ii) POP BX
- b) What do you mean by a macro? What are the differences between a macro & a subroutine? 8
- OR**
8. a) Define a macro 'SQUARE' that calculates square of a number. 4
- b) What is subroutine? Explain the advantages of subroutine. 5
- c) How do you pass parameters to macro? 4
9. a) Draw & explain internal architecture of 8255. 8
- b) Draw & explain modes of operation of IC 8255. 6
- OR**
10. a) Draw the interfacing of IC 8255 with 8086 & write assembly language program to initialize port A & port B as input port & port C as output port. 8
- b) Draw & explain 8086 write bus cycle. 6
11. a) Draw & discuss the internal architecture of 8259. 9
- b) Explain the functions of following pins of 8259. 4
- i) $CAS_0 - CAS_2$
- ii) $\overline{SP}/\overline{EN}$
- OR**
12. a) Draw & explain interrupt structure of IC 8086. 7
- b) Explain any three operating modes of 8259. 6
