CSE

B. Tech 5th 2024-25 **Total Pages : 04**

Roll No.

45168

MICROPROCESSOR AND INTERFACING ES-301A

BT-5/D-24

Time : Three Hours]

[Maximum Marks: 75

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

Section I

- (a) Create a schematic representation of the 8086 microprocessor's functional components and elaborate on the concept of Pipelining. 10
 - (b) Explain the concept of Memory Segmentation in detail.5
 - (a) Illustrate the pin layout of the 8086 microprocessor and provide a detailed explanation of each pin's purpose.
 10
 - (b) Describe the role of the 8284 chip in generating timing and reset signals for the 8086 microprocessor.

(5-17/5) L-45168

2.

P.T.O.

5

Section II

- 3. (a) Provide and analyze the timing diagram for a memory read operation in the 8086 microprocessor's Minimum Mode.
 - (b) Classify semiconductor memories. Describe the procedure of interfacing static memories with a CPU.

5

4. (a) Sketch and explain the interface of 8 K × 8 RAY and 8 K × 8 E²PROM using a decoder in minimum mode.

(b) Give the cell structures of PROM and E²PROM memories. 5

Section III

- 5. (a) Generate the HEX codes for the following instructions :
 - (i) Mov AX, [SP+DI][2000]
 - (ii) Mov AX, BX
 - (b) Explain the following instructions with an example for each :
 - (i) LDS
 - (ii) XLAT
 - (iii) AAA
 - (iv) DAA
 - (v) ROL.

L-45168

2

- 6. (a) Define Addressing Modes and explain all the valid addressing modes for 8086 microprocessor. Explain the different assembler directives for 8086 microprocessor.
 10
 - (b) Write a 8086 ALP to convert a given hexadecimal number into its equivalent ASCII code.

Section IV

- 7. (a) Interface 8-bit ADC with 8086 using 8255 ports. Configure port A of 8255 for transferring output of ADC to the CPU and port C for control signals. Assume that an analog input is present at I/P2 of the ADC and a clock input of suitable frequency is available for ADC. Draw the schematic and write the required assembly language program.
 - (b) Draw and explain the pin configuration and the internal architecture of 8255. Write a BSR mode control word subroutine to set bits PC7 and PC3 and reset them after 10 milli seconds. The port address selected is 83h.

3

(5-17/6) L-45168

16

P.T.O.

- 8. (a) With the help of a block diagram, explain the functioning of Intel 8259 chip.8
 - (b) Explain in detail the functioning of 8237 DMA controller.
 7

L-45168

4

1,250