

Fifth Semester B. E. (Electrical Engg.) Examination

MICROPROCESSOR AND MICROCONTROLLER

Paper – 5 EP 02

(USC – 10551)

P. Pages : 3

Time : Three Hours]

[Max: Marks : 80

- Note :** (1) Separate answer book must be used for each section in the subject Geology, Engineering material of Civil branch and separate answer book must be used for Section A and B in pharmacy and Cosmetic Tech.
(2) Answer **Three** questions from Section A and **Three** questions from Section B.
(3) Assume suitable data wherever necessary.
(4) Illustrate your answer wherever necessary with the help of neat sketches.

SECTION A

1. (a) Draw and explain timing diagram of the instruction MVI A, 32 H. 7
- (b) Explain in detail bus architecture of 8085 MPU. 6

OR

2. (a) Explain various addressing modes of 8085 MPU. 6
- (b) Explain the operations of following instructions in 8085 MPU.
 - (i) STAX B
 - (ii) RAR
 - (iii) ANAC
 - (iv) OUT O|H
 - (v) WAD D
 - (vi) SHLD 2050
 - (vii) XCHG 7

3. (a) Write an ALP to load the hexadecimal number 93H and A7H in registers H and L respectively. If sum is greater than FFH display O | H at port O, otherwise display the sum. 7
- (b) Explain SIM and RIM instruction of 8085 MPU. 6

OR

4. (a) Explain the interrupt process in 8085 MPU. when it is interrupted at INTR pin. 7
- (b) Explain how the information is stored and retrieved from the stack using the instructions PUSH and POP and stack pointer register. 6
5. (a) Write a BSR control word subroutine to set bits PC7 and PC3 and reset them after 10 ms. Port addresses are
Port A = 80 H, Port B = 81 H, Port C = 82 H control register = 83 H.
Also give the delay program. 8
- (b) Explain following ICWs for PIC = 8259.
- (i) ICW₁ (ii) ICW₂ (iii) ICW₃
- For master and slave. 6

OR

6. (a) Draw and Explain block diagram of USART 8251. 8
- (b) Explain various priority modes in 8259 PIC. 6

SECTION B

7. Write a subroutine to initialize counter 2 in 8253 in mode O with a count of 50,000₁₀. The subroutine should also include reading counts on the fly, when the counter reaches zero, it should return to main program. Write a main program to display seconds by calling subroutine as many times as necessary.
Port addresses are as follows counter 2 = 82 H, control Register = 83 H.

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OR

8. Explain the Architecture of 8086 MPU. 14
9. (a) Explain the basic components of Data acquisition system. 6
(b) Explain with the help of diagram, measurement of D.C. voltage using Microprocessor. Also write the program for the same. 7

OR

10. Explain with the help of diagram and program measurement of phase angle using Microprocessor. 13
11. (a) Explain Interrupts of 8051 Microcontroller. 7
(b) Explain the difference between Microprocessor and Microcontroller. 6

OR

12. Explain Dual role of Port 'O' with its internal logic circuit. 13

