B.E. Electrical (Electronics & Power) Engineering Fifth Semester

EP 502 - Microprocessors and Microcontroller

P. Pages : 2 **GUG/W/18/1617**

Time : Three Hours * 1 2 7 1 * Max. Marks : 80

Notes : 1. All questions carry marks. as indicated.
2. Illustrate your answers wherever necessary with the help of neat sketches.

1. a) Explain the addressing modes of 8085 microprocessor with suitable example. **8**

b) Draw the Timing diagram of ADD M instruction. **8**

OR

2. a) Explain the Bus structure of 8085 microprocessor with block diagram. **8**

b) Explain the functions of the following pins of 8085 uP. **8**
i) $\overline{\text{RESETIN}}$
ii) S_0 and S_1
iii) READY
iv) HLDA

3. a) Explain the following instruction of 8085 microprocessor. **8**
i) LXI H, 4200 H
ii) XTHL
iii) ACI 28 H
iv) CPE C052H

b) A block of data is stored in a memory location starting from C205H to C20AH. Write an ALP to transfer this data to a memory location 3080 H to 3085 H in reverse order. **8**

OR

4. a) An 8085 ALP is given below. Assume that CF is initially reset. The content of accumulator after execution of the program is **4**

```
MVI A, 07 H
RLC
MOV B, A
RLC
RLC
ADDB
RRC
```

b) Calculate the count to obtain 100 μsec. loop delay and express value in hex. The clock frequency of the system is 2 MHz. **4**

```
        MVI B, count
Loop →  NOP
        NOP
        DCR B
        JNZ Loop
```

c) What is subroutine? State the three things that should be considered while writing the subroutine. Explain CALL and RET instruction operation related to subroutine. **8**

5. a) Interface 8085 uP with 2k x 8 RAM memory using 2k x 4 RAM memory chips. Give the address range of each of the memory. **8**

b) Explain memory mapped I/O and I/O mapped I/O in detail. **8**

OR

6. a) Explain serial data transfer scheme through SOD and SID line. **8**

b) List various interrupt of 8085 uP. Distinguish between Hardware and software interrupt. **8**

7. a) With the help of neat interfacing diagram give interface between 8085 uP and 8255 PPI. The memory mapped I/O CWR address is C2FF H. **8**

b) Explain the various control word format of 8255 PPI. Also give the control word for the following. **8**

P_A : Strobed output
P_B : Simple input
P_{CL} : Simple output
P_{CO} : Simple input

OR

8. a) Explain various I/O modes of 8255 PPI. **8**

b) Draw the interfacing diagram of 7-segment LED display with 8085 uP. **8**

9. a) Draw and explain block diagram of 8051 micro-controller. **8**

b) Explain the operating modes of Timer/Counter (T/C) of 8051 microcontroller. **8**

OR

10. a) Explain watch-dog timer in detail. **8**

b) List various SFR of 8051 micro-controller. Draw and explain bit pattern of TCON Register. **8**

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