Exam.Code:0915
Sub. Code: 6394

2063

B. E. (Computer Science and Engineering)

Third Semester

CS-304: Microprocessors

Time allowed: 3 Hours **Max. Marks: 50**

NOTE: Attempt five questions in all, including Question No. I which is compulsory and selecting two questions from each Section.

x-x-x

Q1.

(i) What is Bus Idle? (1)

(ii) How many address lines are used to identify I/O port in peripheral and in memory mapped I/O methods. (1)

(iii) Distinguish between MVI M,45H and LXI H, 1234H. (1)

(iv) Briefly explain the CMP instruction with help of examples. (2)

(v) What is a PSW? (I)

(vi) List various conditional jump instructions and explain any one. (2)

(vii) How we create time delays in a program? (1)

(viii) What is programmable interval timer? (1)

SECTION – A

Q2. (a) What do you mean by addressing mode? Explain the different addressing modes with an example of each. (4)

(b) Design a microcomputer consisting of four chips of 4K each and a ROM chip of 2K bytes. It has two input ports and two output ports. Give the addresses of all these chips and I/O ports, if configured in (6)

(i) I/O mapped I/O

(ii) Memory mapped I/O

Q3. (a) Explain terms clock cycle (T-state), machine cycle and instruction cycle. Draw timing diagram for MVI M, 20 H instruction. (5)

(b) Write and assembly language program to separate positive and negative numbers from an array of 16 numbers stored from 3100H. Store the positive numbers from 3120H and negative numbers from 3150 H. (5)

Q4. (a) Write a program to search a byte stored at location 2000H from a set of 8-bit numbers stored from location 3000H. 3000H stores the total number of 8-bit numbers and numbers are stored from 3001H location onwards. If the byte is found store the address of the memory location at 4001H (low address byte) and 4002H (high address byte). (4)

(b) Registers BC contains 8538H and registers DE contains 62A5H. Write the set of instructions to subtract the contents of DC from the contents of DE, and place the result in BC registers. (3)

(c) Write an 8085 assembly language program to perform decimal addition without using DAA instruction. (3)

P.T.O.

SECTION-B

Q5. (a) What is a subroutine? How a subroutine call is handled by microprocessor? Explain CALL and RET instructions. Write a subroutine to set the Zero flag and check whether the instuction JZ functions propoerly, without modifying the contents of other flags. (3)

(b) Explian the RIM and SIM instrcutions (3)

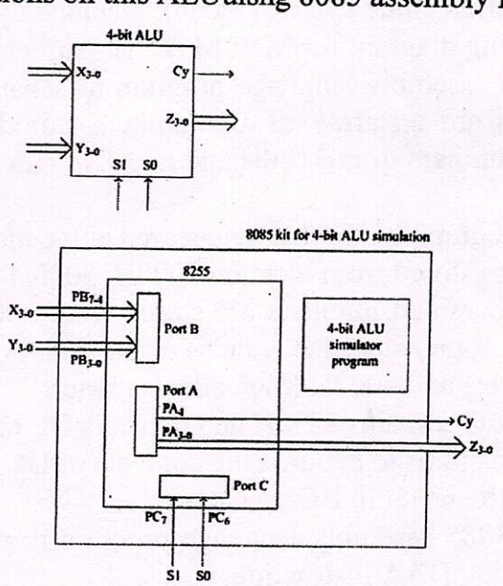
(c) SOD pin of 8085 could be used for serial data transmission. Write a program to generate a rectangular wave having Ton = 0.25 ms and Toff = 0.50 ms uisng SOD pin. Assume 8085 operates at 3MHz clock frequency. (4)

Q6. (a) Describe the 8085 interrupt system with a neat diagram of the architecture of 8085 interrupt system. (4)

(b) Interface 8 switches and a seven-segment display to 8085 using 8255 PPI. Show the interfacing with a neat diagram. Write a program to display the switch number when a switch is open. Consider that 8255 is interfaced in memory mapped I/O technique with Control Word register having address as 3503H. (6)

Q7.

(a) A schematic for implementing a 4 bit ALU is shown uisng 8255 PPI. Explain the functioning of this ALU if S_1 and S_0 are used to perform various operations of ALU and write the function to perform basic addtion subtraction opertaions on this ALUuisng 8085 assembly language. (6)



(b) Explain the functional block disgarm of 8257 DMA controlller. (4)

X-X-X