**SIES COLLEGE OF ARTS, SCIENCE & COMMERCE**

**Name:**

**Roll No.:**

**SION(west)**

**TYBSc SEMESTER VI (2015-2016)**

**ELECTRONIC INSTRUMENTATION**

 **Assignment 1**

1. Fill in the blank spaces with appropriate words.

 i) MOV C, A is technically \_\_\_\_\_\_\_\_\_ the data in \_\_\_\_\_\_\_ into \_\_\_\_\_\_\_\_\_\_\_.

 ii) The memory locations that follow C209H are \_\_\_\_\_\_\_\_\_ & \_\_\_\_\_\_\_\_\_.

iii) Give any two instructions to clear the accumulator of 8085 μP.

 a)\_\_\_\_\_\_\_\_\_\_\_ b)\_\_\_\_\_\_\_\_\_\_\_

 iv) The width of STA F100H is \_\_\_\_ byte while that of MOV B, M is \_\_\_\_ byte.

 v) The width of MVI B, E5H is \_\_\_\_\_\_byte.

vi) CMP instruction only affects the \_\_\_\_\_\_\_.

 vii) In a µP, if D7 bit of an 8- bit data is 1 then the data is \_\_\_\_\_\_\_ else it is \_\_\_\_\_\_.

 viii) The 3 types of buses in 8085 μP are \_\_\_\_\_\_\_ bus ,\_\_\_\_\_\_\_ bus & \_\_\_\_\_\_\_\_ bus.

 ix) MOV B, H instruction, the source register is \_\_\_ and the destination register is \_\_\_\_.

 x) If an arithmetic operation results in 00H in accumulator, then zero flag is \_\_\_\_\_\_\_.

2. Write the instructions for the following:

* 1. Add the content in register C to the content in accumulator.
	2. Copy the content in register B to register H.
	3. Increment the content in register B.
	4. Subtract immediately D5H from the accumulator content.
	5. Jump to F200H if a borrow is generated.
	6. Send the data from accumulator to port address 01H
	7. Complement accumulator content.
	8. Set the carry flag.
	9. Do not perform any operation
	10. Store the accumulator content into memory location C550H.
	11. Load HL pair direct with address C420H.
	12. Logically AND immediately A0H with accumulator content.
	13. Rotate accumulator content to the left through carry.
	14. Clear register B.
	15. Exchange the content in HL pair with DE pair of registers.

3. How many bytes would the following programs use from memory?

 a) MVI E, 9CH b) LXI H, C110H c) MVI B, 88H d) LXI H, D550H

 MOV A, E MVI M, ACH MOV A,B MOV A, M

 STA C225H DCR M CMA RAR

 HLT INX H MOV C,A ADD M

 HLT INR C STA D055H

 RST 1 RST 1

4. Find the 1’s complement of 76H and the 2’s complement of 8BH.

5. Classify the following data bytes as even, odd, positive and negative.

 80H, 52H, 35H, E8H, 67H, CDH, B8H, 7EH, FFH, 09H, A1H, 7BH, D5H, F2H.

 μP Assignment1\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* μP Assignment1

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 **Assignment 2**

1. Write the width and the functional category of the following instructions in 8085 microprocessor.

a) ADD C b) MVI D, 55H c) INX H d) DAD B e) JMP C843H f) CMP D

 g) RAL h) STA F000H i) STAX D j) CMP B k) ADC H l) SBB D

1. Study the following programs written for the 8085 microprocessor and give the contents of A, B, C and D after the execution of each of the instructions.

i) ii)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | A | B | C | D |
| MVI C, 9BH |  |  |  |  |
| MOV A, C |  |  |  |  |
| MOV D, A |  |  |  |  |
| SUB C |  |  |  |  |
| MOV B, A |  |  |  |  |
| HLT |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | A | B | C | D |
| MVI A, 00H |  |  |  |  |
| MVI B, F8H |  |  |  |  |
| MOV C, A |  |  |  |  |
| MOV D, B |  |  |  |  |
| HLT |  |  |  |  |

1. The content of the accumulator is 84H and the content of register B is 98H. Add the 2 data, show the

 sum expected in microprocessor and the status of S, Z and carry flags.

1. a) Explain the operation of XRA A and tell the status of Z and S flags.

 b) Explain the operation performed by using i) ADD A ii) SUB A.

1. What is the content of the accumulator after the execution of----

MVI A, 92H

CPI 26H

Is the sign flag set or reset?

1. Write a program in assembly language, convert into machine language and write proper comments to

 add 5BH and F6H. Store the sum in memory location having the address D700H.

1. Write the function performed by the following instructions in 8085 microprocessor.

a) ADD E b) MVI D, 5BH c) INX H d) DAD B e) JMP C8FFH f) OUT 00H

 g) RAL h) STA F422H i) STAX D j) CMP C k) ADC H l) DCR L

 μP Assignment2\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* μP Assignment2

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**ELECTRONIC INSTRUMENTATION**

 **Assignment 3**

1. After an arithmetic operation the accumulator contains 9DH and the carry flag is set .Explain what

 happens to the contents after the execution of RAL instruction.

1. Which of the following methods stores the data E7H into memory location D250H? Picturize before conclusion.

Case 1 Case 2 Case3

MVI A, E7H LXI H, D250H LXI B, D250H

STA D250H MVI M, E7H MVI A, E7H

HLT HLT STAX B

 HLT

1. Write a program in assembly language to load 8FH in memory location C000H. Increment the contents.

 Then load 5EH in C001H. Decrement the contents and halt the program.

1. Write a program to find 2’s complement of the 8 bit data in C100H and store the result in C200H.
2. Draw a flow chart and Write a program in assembly language to load 90H in register B, A2H in register C and add them. Store the result in the memory location D400H.

6. Specify the register contents and the flags ( S, Z,CY) after each of the instructions in the following code :

 MVI A, A9H

 MVI B, 57H

 ADD B

 ORA A

7. Write the addressing mode for the following instructions:

a) ADD H b) MVI D, 54H c) INX H d) DAD D e) JMP C22FH f) OUT 01H

 g) RAL h) STA F000H i) STAX D j) CMP B k) LXI H, C120H l) DCR B

1. Fill in the blank spaces with appropriate words.

 a) Rotate instructions can be used only on the content in \_\_\_\_\_\_\_\_\_\_\_\_\_.

 b) The width of the instruction MVI A, AAH is \_\_\_\_\_\_.

 c) In 8085µP, the crystal frequency is 6MHz. The operating frequency is \_\_\_\_\_\_ MHz.

 d) Pictorial representation of a program is known as a \_\_\_\_\_\_\_\_\_\_\_\_\_\_.

 e) The instruction STC means \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ , CMA means \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

 f) Assembly language is a \_\_\_\_ level language.

 g)The unconditional jump instruction in 8085 μP has the mnemonic \_\_\_\_\_\_\_.

 μP Assignment3\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* μP Assignment3

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 **Assignment 4**

1. Write a program in assembly language with proper comments :
2. To clear memory location C005H in 8085 microprocessor.
3. To find 2’s complement of the 8 bit data in C100H and store the result in C101H.
4. To transfer ONE data byte from memory location F020H to memory location F021H.
5. To store the data 57H into memory location D050H.
6. To exchange the contents in memory locations C200H and C201H.
7. To add 2 decimal numbers 65 and 37, stored in A and B registers respectively. Store the result at C register.
8. To add the natural numbers from 1 to 10 and store the sum in memory location C550H.

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 μP Assignment4\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* μP Assignment4