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TI-A

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MPMC
Assignment

MVI B, 82H
Mov A, B
Mov C, A
MVI D, 37H
OUT PORT
HLT

O/p - 82H

6. SUB A
DCR B
INR B
SUI 0H
HLT

A	B	S	Z	CY
XX	XX	X	X	X

INST-1
SUB A

A	B	S	Z	CY
00	XX	0	1	0

INST-2

A	B	S	Z	CY
00	00	NA	NA	NA

INST-3
DCR-B
B - 00H

0000 0001
1111 1110
1 1 1 1 1 1 0 1

```
MVI A, BYTE1
ORA A
JP OUTPRT
XRA A
: OUT F2H
  HLT
```

Address of output port = F2H.

All +ve signed numbers and zero will be displayed at port F2H.

BYTE 1 = 92H

PORT F2H = ?

= 00 ANS

```
MVI A, BYTE1      ; Get data
ORA A             ; Set flag
JM OUTPRT
OUT 01H
HLT
OUTPRT: CMA       ; find 2's complement
ADI 01H
OUT 01H
HLT
```

This routine displays the absolute value (magnitude) of BYTE1.

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Int-4

INR B (Increase the content of reg by 1)

```
  1111 1111
       1
  ---------
  0000 0000
```

A	B	S	Z	CY
00	00	0	1	NA

Instr SUI 01H

A - 00H 0000 0000

2's comp of 01H = 0000 0001
1111 1110
+ 1
1111 1111

FFH will store in accumulator

A	B	S	Z	CY
FF	00	1	0	1

Qus) MVI A, 00H
MVI B, F8H
MOV C, A
MOV D, B
HLT

Initial

A	B	C	D	S	Z	CY
XX	XX	XX	XX	X	X	X

Instruction 1

A	B	C	D	S	Z	CY
00	XX	XX	XX	NA	NA	NA

Inst 2

A	B	C	D	S	Z	CY
00	F8	XX	XX	NA	NA	NA

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Q

Ques7 Both will be 80H

Ques11

```
MVI A, 5EH
ADI A2H
MOV C, A
HLT
```

A	C	S	Z	CY
XX	XX	0	0	0

Soln

Inst1

A	C	S	Z	CY
5E	XX	NA	NA	NA

Inst2

A	C	S	Z	CY
00	XX	0	1	1

Int 3

00	00	NA	NA	NA

Q15

```
MVI A, F8H
SUI 69H
```

Soln

```
1111 1000
0110 1001
---------
1001 1111
---------
1001 0101
```

A = 95

S = 1

CY = 0

The S flag has no significance when subtracting unsigned numbers. If the CY flag is set it indicates a negative ~~neg~~ result

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```
MVI A, 8FH      /// Move 8F to A
ADI 72H         // ADD 8F and 72
JC DISPLAY      // Jumped to Display as carry
OUT PORT1
HLT
DISPLAY : XRA A     // XOR acc. data
    OUT PORT I
    HLT
```

```
  1000 1111
  0111 0010
-------------
1 0000 0001
```

OUTPUT at Port 1 = 00H

```
MVI A, BYTE1
MOV B, A
SUI 50H
JC DELETE
MOV A, B
SUI 80H
JC DISPLAY
XRA A
OUT PORT1
HLT
MOV A, B
OUT PORT2
HLT
```

In this, all bytes from 50H to 7FH will be displayed at PORT2.

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Q20 The instruction XRA A clears the accumulator, and flag status is: CY = 0, Z = 1

Ques21

```
MVI A, A9H
MVI B, 57H
ADD B
ORA A
```

Instruction ADD B sets the CY flag, but the instruction ORA A reset the CY flag

A = 00 S = 0 Z = 1 CY = 0

Ques24

```
XRA A
MVI B, 4AH
SUI 4FH
ANA B
HLT
```

	A	B	S	Z	CY
	xx	xx	x	x	x

	A	B	S	Z	CY
Inst 1	00	xx	0	1	0
Inst 2	00	4A	NA	NA	NA
Inst 3	B1	4A	1	0	1
Inst 4	0D	4A	0	1	1

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Inst3

A	B	C	D	S	Z	CY
00	F8	00	XX	NA	NA	NA

Inst4

A	B	C	D	S	Z	CY
00	F8	00	F8	NA	NA	NA

HLT the program.

MVI A, F2H

MVI B, 7AH

ADD B

OUT PORT0

HLT

A	B	S	Z	CY
00	FF	0	1	0	X

Initial

Inst1

A	B	S	Z	CY
F2	FF	NA	NA	NA

Inst2

A	B	S	Z	CY
F2	7A	NA	NA	NA

Inst3

6C	7A	0	0	1

Q18 (a) Clear accumulator

~~SUB A~~

(b) add 47 (use ADI instruction)

(c) Subtract 92H

(d) add 64H

(e) display the result after subtracting 92H and after adding 64H

```
SUB A
ADI 47H
SUI 92H
OUT PORT0
ADI 64H
OUT PORT1
```

47H = 0100 0111

2's comp = 0110 1110

1011 0101 = BSH [Borrow flag (CY) is set to indicate negative results]

64H = 0000 0000

1000 1001 = 19H [Borrow flag is deleted by CY of the result]

(PORT0) = BSH & (PORT1) = 19H.

Q19 If a number is added before clearing the acc. the result will include the residual content of accumulator

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