1) Add 3 numbers 17H, 23H & one in B = 72H by writting an ALP for X85[8085]. what will be the value of A after execution. write the status of flag register.

2) Subtract 12H from 23H & deduce its impact on flag register by writting an ALP for X85.

3) Write an ALP for X85 to logical AND 12H & CDH; consequently do logical OR with the previous result and ABH

4) Write an ALP for X85 to compare ABH & DEH; assume ABH is stored in Accumulator. successively make a conditional Jump to 2050H as contained in HL pair and do XOR operation with the data contained there in [i.e, M = 11H] if the comparison leads to borrow else HLT the program

Hint: CMP A<B → Borrow(-ve) → XOR b/w A & H

→ HLT

→ Borrow (+ve) → HLT.

5) Write an ALP to multiply a gy. number by 2. Let the # be 76H successively divide the product by 4 and Halt the program.

Solutions

1)

```
MVI A, 17H
MVI B, 23H
[illegible]
ADD C
ADD B
OUT 01H
HALT
```

A = 17H ≡ 00010111

C = 23H ≡ 00100011

A = 3AH ≡ 00111010

B = 72H ≡ 01110010

A = ACH ≡ 10101100

A = ACH ≡ 1010 1100

S	Z	P	CY	AC
0	0	1	0	0

(even)

set = 1

reset = 0

```
MVI   A, 72 H
MOV   B, A
MVI   A, 23 H
MOV   C, A
MVI   A, 17 H
ADD   C
ADD   B
OUT   01 H
HALT
```

(or)

```
MVI   A, 17 H
ADI   23H
ADI   72H
OUT   01 H
HALT
```

2)

```
MVI   A, 12 H
MOV   B, A
MVI   A, 23H
SUB   B
OUT   01 H
HALT
```

A = 23H ≡ 00100011

B = 12 H = 00010010

~~00100001~~

~~A = 01H = 00000110~~

A = 11H ≡ 00010001

S	Z	P	B	AB
0	0	1		

3)

```
MVI  A, 12H
MOV  B, A
MVI  A, ABH
MOV  C, A
MVI  A, CDH
ANA  B
ORA  C
OUT  01H
HALT
```

(Or)

```
MVI  A, CDH
ANI  12H
ORI  ABH
OUT  01H
HALT
```

A = CDH = 10101011
B = 12H = 00010010
A = 02H = 00000010
C = ABH = 10

A = CDH = 11001101
B = 12H = 00010010
A = 00H = 00000000
C = ABH = 10101011
A = ABH = 10101011

S	Z	P	CY	AC
0	0	0	0	0

4) MVI A, ABH (optional)

CPI DEH

JNC Label1

XRA 2050H

Label1

HALT

A < DEH ⇒

CY	Z
1	0

C=1

$\overset{1}{\phi}\overset{2}{\phi}\overset{0}{2}\overset{1}{0}\overset{2}{\phi}\overset{2}{2}$

A = ABH ≡ 1010 1011

I = DEH ≡ 1101 1110

(−)

1 1100 1101

carry

C=1

A = ABH ≡ 10101011

M = 2050H ≡ 00010001

(+)

10111010

A = BAH

S	Z	P	CY	AC
0	0	0	0	1

5) MVI A, 76H

		S	Z	P	CY	AC
multiply by 2	RLC	0	0	0	0	0
divide by 4	RRC	0	0	0	0	0
	RRC	0	0	0	0	0

HLT

A = 76H ≡ 01110110

multiple { A = 11101100 = ECH

division { A = 01110110 = 76H
A = 00111011 = 3BH

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