

$$1) (01000101)_2 \text{ to } (x)_{16}$$

$$\underline{0100} \underline{0101} \rightarrow (45)_{16}$$

$$2) (0x63F)_{16} \rightarrow (x)_2$$

$$\begin{matrix} 6 & 3 & F \\ (0110 & 0011 & 1111)_2 \end{matrix}$$

$$3) (45)_{10} \rightarrow 8 \text{ bit binary}$$

$$\rightarrow 0001 \ 1001 \text{ (convert to binary)}$$

↳ sign bit (+ve)

$$4) (0x95)_{16}$$

$$(1001 \ 0101)_2$$

↓
negative (sign bit)

$$0110 \ 1010 - 1's \text{ complement}$$

+

$$0110 \ 1011 - 2's \text{ complement}$$

$$\rightarrow (-107)_{10}$$

$$5) (11011010)_2 \rightarrow (22)_{10}$$

$\hookrightarrow -ve$

$$(00100101) \rightarrow \text{1's complement}$$

$$(00100111) \rightarrow \text{2's complement}$$

$$(-34)_{10}$$

$$6) \{128, 64, 32, 16, 8, 4, 2, 1\}$$

\hookrightarrow basis elements for unsigned

$$\{011, 64, 32, 16, 8, 4, 2, 1\}$$

\hookrightarrow sign bit

$$7) (-54)_{10} \rightarrow (2C)_2 \quad (-54)_{10} \rightarrow (CA)_{16}$$

$$(00110110)$$

$$(11001001)$$

$$(11001011)_2$$

$$(0xCA)_{16}$$

8) 0 → 255

9) -127 → 127

10) completed

11)

Assembly	Instruction size	Memory Address	Object Binary Code	Object Code in Hex
Code1:				
MVIA, 32H	2	4200	00111111000110010	3E 32
MVIB, 48H	2	4202	00000011001001000	06 48
ADD B	1	4204	100000000	80
OUT 01H	2	4205	1101001100000001	D3 01
HLT	1	4207	01110110	76
Code2:				
MVIA, 01H	2	4200	00111111000000001	3E 01
STA 4500H	3	4202	0011001000000000000010001001	32 00 045
HLT	1	4205	01110110	76

Code 3:				
LDA 1000H	3	4200	00111010000000000000000010000 01000111	
MOV B, A	1	4203	00111010000000000000000010000	3A 00 010
LDA 2000H	3	4204	00110010000000000000000010000 01111000	47 3A 00 020
STA 1000H	3	4207	00110010000000000000000010000 01110110	32 00 010 78 32 00 020 76
MOV A, B	1	420A		
STA 2000H	3	420B		
HLT	1	420E		
Code 4:				
MVIA, 55H	2	4200	0011111010011001	3E 55
CMA	1	4202	00101111	2F
STA 1001H	3	4203	00110010000000001000000010000	32 01 010
MVIA, 00H	2	4206	00111110000000000	3E 00
HLT	1	4208	01110110	76

