**3.1**- 00100011

**3.6**-0x15

**3.7**-0x19

**3.8**-21

**3.9**-25

**3.10**-11011101

**3.11**-11100000

**3.18**-

|  |  |  |
| --- | --- | --- |
| **16-Bit Binary** | **Hexadecimal** | **Decimal** |
| 1111111100111100 | 0xFF3C | -196 |
| 1111111110001000 | 0xFF88 | -121 |
| 1111111110000000 | 0xFF80 | -128 |
| 1111111111111010 | 0xFFFA | -4 |
| 0000000000010001 | 0x0011 | 17 |
| 1111111111100111 | 0xFFE7 | -25 |

**3.20**- One’s complement number system is easier to negate the numbers. Two’s complement does not have a negative zero and is much more advantageous in addition, subtraction, and multiplication.

**3.21**- 11010101 with an overflow of 1. Overflow occurred by taking the two’s complement of 00010011, 11101101 and adding it to 11101000, making it a 9-bit value, with a 1-bit overflow.

**3.22** – 0x0088

**3.24**-

X = 0b10010100 = 0d148\_\_\_\_\_\_\_

Y = 0b00101100 = 0d44\_\_\_\_\_\_\_\_

X + Y = 11000000 No overflow. 94+2C=0xC0

X – Y = 01101000 Overflow of 1, it is a 9-bit value. D4+94=0x168

Y – X = 10011000 No overflow. 6C+2C=0x98