Number base conversion and binary arithmetic

Please try to do these problems yourself. Make note of what you don't understand how to do.

* This form will record your name, please fill your name.

Pituchai Mitpaledee

1. Convert 201 base10 to 8-bit binary
   (1 Point)

11001001

2. Convert 201 base10 to base 3 using the division method (5-digit answer ddddd)
   (1 Point)

21110
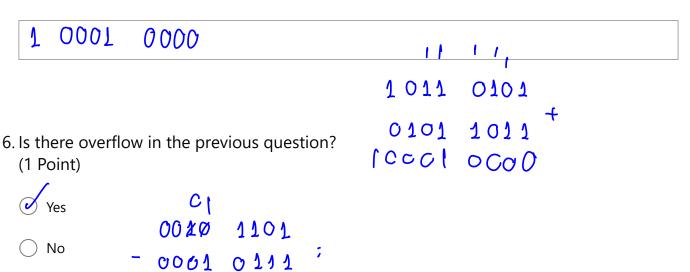
3. Convert 11 1110 0111 binary to hexadecimal
   (1 Point)

3E7

4. Convert C0FE base16 to binary (answer with space between 4 digits: dddd dddd dddd dddd)
(1 Point)

> 1100 0000 1111 1110

5. Compute 1011 0101 + 0101 1011 in regular binary (not sign-magnitude). Write your answer in 8-bit binary.
(1 Point)

> 1 0001 0000

$$1011\ 0101$$
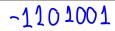$$0101\ 1011\ +$$
$$1\ 0001\ 0000$$

6. Is there overflow in the previous question?
(1 Point)

☑ Yes

○ No

$$0010\ 1101$$
$$-\ 0001\ 0111\ ;$$

$$10$$

7. Compute 0010 1101 - 0001 0111 (regular binary) Write your answer in 8-bit binary.
(1 Point)

> 010110

8. Convert 105 base10 to 8-bit binary representation
(1 Point)

$$\begin{array}{c|c|c}
2 & 105 & 1 \\
2 & 52 & 0 \\
2 & 26 & 0 \\
2 & 13 & 1 \\
2 & 6 & 0 \\
2 & 3 & 1 \\
 & 1 & 1 \\
\end{array}$$

> 100 10 11

9. Convert -105 base10 to 8-bit signed magnitude representation
(1 Point)

~11010001

10. Convert -105 base10 to 8-bit 2's complement representation
(1 Point)

11010101

$$2 \overline{)105} \quad 1 \qquad 1001011$$
$$2 \overline{)52} \quad 0 \qquad 0110100 \quad 1's$$
$$2 \overline{)26} \quad 0 \qquad +1$$
$$2 \overline{)13} \quad 1 \qquad 11010101 \quad 2's$$
$$2 \overline{)6} \quad 0$$
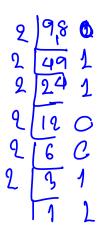$$2 \overline{)3} \quad 1$$
$$1 \quad 1$$

$105 - 7 = 98$

11. Convert 105 base10 to excess-M representation, (use the lowest possible M)
(1 Point)

1100011

12. What areas do you think you need more practice on?
(1 Point)

$$2 \overline{)98} \quad 0$$
$$2 \overline{)49} \quad 1$$
$$2 \overline{)24} \quad 1$$
$$2 \overline{)12} \quad 0$$
$$2 \overline{)6} \quad 0$$
$$2 \overline{)3} \quad 1$$
$$1 \quad 1$$

○ base conversion

○ binary arithmetic

◉✓ 2's complement representation

◉✓ excess-M representation

○✓ signed-magnitude representation

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