CS1021 Tutorial 1

DON'T USE A PROGRAMMER CALCULATOR TO ANSWER THESE QUESTIONS

Q1 Convert the following 8 bit <u>unsigned</u> binary numbers to decimal (i) 01101001_2 (ii) 1000000_2 and (iii) 11111111_2.

(i) 105 (ii) 128 (iii) 255

Q2 Convert the following decimal numbers to 8 bit <u>unsigned</u> binary numbers (i) 79 (ii) 44 and (iii) 126.

(i) 01001111_2 (ii) 00101100_2 (iii) 01111110_2

Q3 Convert the following 8 bit <u>signed</u> binary numbers to decimal (i) 01101001_2 (ii) 10010110_2 and (iii) 11110000_2.

(i) 105 (ii) -106 (iii) -16

Q4 Convert the following decimal numbers to 8 bit <u>signed</u> binary numbers (i) 79 (ii) -44 and -126.

(i) 01001111_2 0x4F (ii) 11010100_2 0xD4 (iii) 10000010_2 0x82

Q5 Convert the following 8 bit binary numbers to hexadecimal (i) 01101101_2 (ii) 10110000_2 and (iii) 10101111_2.

(i) 0x6D (ii) 0xB0 (iii) 0xAF

Q6 Convert the following hexadecimal numbers to 16 bit binary numbers (i) 0xCAFE (ii) 0xFADE and (iii) 0xBEEF.

(i) 1100101011111110_2 (ii) 1111101011011110_2 (iii) 1011111011101111_2

Q7 Convert the following decimal numbers to 16 bit <u>unsigned</u> hexadecimal numbers (i) 51,966 (ii) 64,222 and (iii) 48,879

(i) 0xCAFE (ii) 0xFADE (iii) 0xBEEF

Q8 Convert the following 16 bit <u>unsigned</u> hexadecimal numbers to decimal (i) 0xABCD (ii) 0xF000 and (iii) 0x0FFF

(i) 43,981 (ii) 61,440 (iii) 4095

Q9 Convert the following 16 bit <u>signed</u> hexadecimal numbers to decimal (i) 0xABCD (ii) 0xF000 and (iii) 0x0FFF.

(i) -21,555 (ii) -4096 (iii) 4095

Q10 Calculate and convert the hexadecimal numbers and answers to decimal assuming 16 bit unsigned and signed integers (i) 0x1234 + 0xAAAA (ii) 0x468A + 0xAAAA (iii) 0xAAAA − 0x1234 and (iv) 0x8AAA − 0x6BBB

		unsigned	signed
	0x1234	4,660	4,660
+	0xAAAA	43,690	-21,846
	0xBCDE	48,350	-17,186

		unsigned	signed
	0x468A	18,058	18,058
+	0xAAAA	43,690	-21,846
	0xF134	61,748	-3,788

		unsigned	signed
	0xAAAA	43,690	-21,846
−	0x1234	4,660	4,660
	0xBCDE	48,350	-17,186

		unsigned	signed
	0x8AAA	35,498	-30,038
−	0x6BBB	25,579	-27,579
	0x1EEF	17,357	7,919

Q11 Convert the following <u>unsigned</u> binary numbers to decimal (i) 1010.00101_2 and (ii) 0.1001_2.

(i) 10.15625 (ii) 0.5625