

University of Guyana
Faculty of Technology

EMT 121 - PROBLEM SET I(WITH SOLUTIONS)

February 4, 2010

1. Add the following binary numbers.
 - (a) $100011 + 1100$ Ans. 101111
 - (b) $1000011101 + 10000000$ Ans. 1010011101
 - (c) $1001100 + 1100101$ Ans. 10110001
2. Determine the two's complement for the following binary numbers:
 - (a) 10001010 (b) 11010111 (c) 11111 (d) 000000000Ans. (a) 01110110 (b) 00101001 (c) 00001 (d) 000000000
3. In a computer system that represents all integer quantities using two's complement form, the most significant bit (MSB) has a negative place value. Given the place-weighting, convert the following eight-bit two's complement binary numbers to decimal form:
 - (a) 01000101 (b) 11010111 (c) 10101010 Ans. (a) 69 (b) -41 (c) -86
4. Add the following byte-long(8 bit) two's complement numbers, and then convert all binary quantities into decimal form to verify the accuracy of the addition.
 - (a) $00110101 + 00001100$ (b) $01110110 + 00000010$ (c) $11111110 + 11011101$ Ans. (a) 01000001 (b) 01111000 (c) 11101101
5. Convert the following from Hexadecimal to binary and octal.
 - (a) $2F7A53$ (b) $CF A8762$ Ans. (a) 001011110111101001010011, 13675123 (b) 110011111010100001111100010, 147654166
6. Convert to decimal form.
 - (a) 11001.11_2 (b) $6F8.3D5_{16}$ (c) 776.143_8Ans. (a) 25.75 (b) 1784.2395 (c) 510.193