

### EE1001 Part 3 - Assignment

1. Convert the binary number 11010011.10011 to decimal number.
2. Convert the number  $815.34375_{10}$  to (a) binary number and (b) 32-bit floating-point format.
3. Encode the numbers 574 and 867 to BCD codes and compute their BCD sum.
4. Find the Gray code of number  $759_{10}$ .
5. Find the decimal value of Gray code number 10101110.
6. Find the real number of a single precision floating point number AD758000.
7. Given an 8-bit binary number: 11011011, find its equivalent decimal value for different representations (a) unsigned, (b) 2's complement.
8. Perform  $1101010 - 1111101$  for (a) unsigned number, (b) 2's complement number. Validate your answers.
9. Express 91, 169, -87, -111 in 8-bit 2's complement number representation.
10. Use the answers from question (9) to compute (a)  $91-169$ , (b)  $169 - (-87)$ , (c)  $-87 - (-111)$ . Validate your answers.
11. Perform  $1110 \times 1011$ .
12. Find the quotient and remainder for  $011010/110$ .
13. For the logic circuit shown in Figure 1, determine the type of logic function. You need to show the switches' on/off state for different input (A,B) conditions.

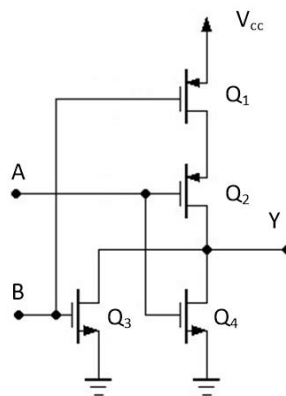


Figure 1

14. Given a binary number **a** and its 2's complement number **b**, explain why **b** can be treated as **-a**. State all your assumptions/conditions in your prove.