1) Perform the following conversions (assume all unsigned numbers):
   a) 10101001111₂ to base 10 (decimal)
   b) 999₁₀ to base 2 (binary)
   c) D56B₁₆ to base 2 (binary) and to base 10 (decimal)
   d) 581₁₀ to base 8 (octal) and to base 16 (hexadecimal)

2) A=011110₂, B=100001₂, C=111010₂, and D=1101₂ are unsigned binary numbers. Calculate:
   a) The sum, A+B+C+D
   b) The difference, B–A
   c) The product, A×D

3) Using the 2’s complement system, convert the following positive numbers to negative numbers of the
   same absolute value and same number of bits:
   a) 010010₂
   b) 000011₂

4) What is the decimal (base 10) value of 10111 when read as
   a) An unsigned binary number
   b) A sign-magnitude binary number
   c) A 1’s complement binary number
   d) A 2’s complement binary number
   e) A hex (base 16) number

5) The upcoming generation of CPUs is “64 bit”, meaning datapaths are 64 bits and the CPU can crunch
   64-bit integers. What are the decimal (base 10) values of the largest and smallest binary numbers
   (integers) that can be expressed using the following. Note: you may use a calculator for this question.
   a) 64 bits with no sign bit
   b) 64 bits as signed-2’s complement

6) Re-express the following 4-bit 2s complement numbers as 8-bit 2s complement numbers with the
   same value:
   a) 0110
   b) 1011

7) Draw a circuit diagram to implement the following logic function: \( \overline{ABC} + B\overline{C} + A(\overline{BD}) \)
WEB TREASURE HUNT!

8) Why doesn’t Prof. Dickey have a leisurely lunch 11:30-12:30 on Mondays?

9) When do your TAs have office hours??

10) Randy Katz, the author of our textbook, is a professor at what institution?

11) I have subscribed to the cse370 mailing list. (T/F)

12) Who was the author of the 2nd message sent to the mailing list this quarter?

13) Somewhere, there’s a page with 8 tips about Designworks. Which tip (by number) explains the symbol “Z”? What does it say about “Z”?