

HW -1

Due date 2/5/2019

Instructions: Show all work. Submit using blackboard.

1.1

10 Marks

What is the decimal equivalent of the largest binary integer that can be obtained with **(a)** 11 bits and **(b)** 25 bits?

1.2

24 Marks

*Convert the following numbers from the given base to the other three bases listed in the table:

Decimal	Binary	Octal	Hexadecimal
369.3125	?	?	?
?	10111101.101	?	?
?	?	326.5	?
?	?	?	F3C7.A

1.3

16 Marks

*Perform the following conversion by using base 2 instead of base 10 as the intermediate base for the conversion:

(a) $(673.6)_8$ to hexadecimal **(b)** $(E7C.B)_{16}$ to octal **(c)** $(310.2)_4$ to octal

1.4

20 Marks

A limited number system uses base 12. There are at most four integer digits. The weights of the digits are 12^3 , 12^2 , 12, and 1. Special names are given to the weights as follows: $12 = 1$ dozen, $12^2 = 1$ gross, and $12^3 = 1$ great gross.

- (a)** How many beverage cans are in 6 great gross + 8 gross + 7 dozen + 4?
(b) Find the representation in base 12 for 7569_{10} beverage cans.

1.5

30 Marks

Considerable evidence suggests that base 20 has historically been used for number systems in a number of cultures.

- (a)** Write the digits for a base 20 system, using an extension of the same digit representation scheme employed for hexadecimal.
(b) Convert $(2007)_{10}$ to base 20. **(c)** Convert $(BC1G)_{20}$ to decimal.