EGC-442 HW #3 Dr. Izadi

First Name: Last Name:

# Problem 1 (25 Points)

Show the internal architecture of a 4-bit ALU with the following function table:

ALU Control Lines	Functions
	AND
	OR
	XOR
	NAND
	NOR
	ADD
	Subtract
	SLT

Your design should have the following flags: Carry, Sign, Zero, Overflow

# Problem 2 (15 Points)

Write a MIPS subroutine to carryout the following function.

temp = 
$$v[k]$$
;  
 $v[k] = v[k+1]$ ;  
 $v[k+1] = temp$ ;

Assume base address of v is register \$a1, k is in register \$a2, and temp is assigned to \$s1.

## Problem 3 (15 Points)

Show the IEEE 754 binary representation of the number +0.375<sub>ten</sub> in single precision

## Problem 2 (15 Points)

Show the IEEE 754 binary representation of the number -0.9375<sub>ten</sub> in double precision:

## Problem 3 (20 Points)

Convert the single precision binary floating-point representation to decimal.

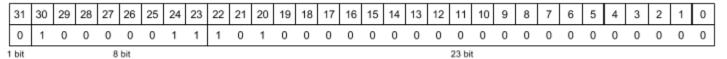


Figure 1: Floating point representation