Tutorial 5

Problem 1
Implement the following modules in System-C using using only NAND-gates and inverters:

a) AND, OR, XOR, EQUIV Gates
b) 2-input Multiplexer (1-bit width, 8-bit width)
c) 4-input Multiplexer (1-bit width, 8-bit width)
d) 1-Bit Full Adder
e) 8-Bit Priority Encoder, also 24 Bit
f) 3-8 Decoder
g) 32-Bit Population Count (optional)
h) 32-bit Barrel Shifter, also 24-Bit
i) 8-Bit Ripple Carry Adder
j) 8-Bit ALU
k) 32-Bit Carry Look Ahead Adder (optional)
l) 32-Bit ALU (optional)
m) 24x24-Bit unsigned Multiplier with Wallace Tree (optional)
n) IEEE 32-bit Floating Point Multiplier
o) IEEE 32-bit Floating Point Adder (optional)

Note: Make use of sub-modules

Problem 2
Implement the modules of Problem 1 in System-C using using only NAND-gates and inverters.