| ELEC 2210 | H/W #6 | Due Wednesday, 10/28/20 |
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a. For each problem below, draw the CMOS circuit and size the transistors based on a CMOS inverter with $\left(\frac{W}{L}\right)_N = \frac{2}{1}$ and $\left(\frac{W}{L}\right)_P = \frac{5}{1}$.

1. $Z = \overline{A + B + C}$

2. $Z = ABC$

3. $Z = \overline{A(B + C)}$

4. $Z = \overline{AB + CD}$

5. $Z = \overline{A + \overline{B}C}$

b. For a 9 inverter ring oscillator, made with symmetrical inverters, what is the output frequency, when $R_{on_n} = 2500\Omega$ and $C = 1pF$?