Problem 1. (10 points) Draw the schematic of a CMOS circuit implementing the logic function \( \text{Out} = (A + BC)(D + EF + EG) \). You should try to use a minimum number of transistors.

Problem 2. (10 points) Fix one design error in the following circuit. What Boolean function does the fixed circuit implement?

Problem 3. (10 points) As described in the lecture slides, the n-well regions in a CMOS n-well process is defined using an n-well mask as shown in the following figure. Now assume that the shaded region on the optical mask is opaque.

1) What kind of photoresist must be used in photolithography in order to have an n-well as shown on the left of the figure?
2) What is the alternative way of doing the same thing? (Assume that photolithography is still used).

Problem 4. (10 points) Extract a transistor-level schematic for the following layout.