1. Solve the following problems:
   I. Convert the following decimal numbers to binary numbers
      A. 32
      B. 23
   II. Convert the following binary numbers to decimal numbers
      A. 1011
      B. 10101
   III. Convert the following hexadecimal numbers to binary numbers
      A. F002
      B. BEEF
   IV. Convert the following hexadecimal numbers to decimal numbers
      A. FF
      B. 100

2. The following CMOS circuits implements a boolean function. Vdd represent the supply voltage and GND represent the ground voltage.
   a. Complete the table below. Specify whether transistors are ON or OFF and the circuit output.
   b. Describe the circuit (either by words or with a boolean expression)
3. Implement the Boolean equation \( F = (a \text{ AND } b') \text{ OR } c \text{ OR } d' \) using only NOR gates and inverters. Your NOR gates can have more than 2 inputs.

4. Concisely describe the following problem using a Boolean equation. We want to fire a football coach (by setting \( F = 1 \)) under at least one of two conditions:
   a. if he is mean (represented by \( M = 1 \))
   b. if he is not mean but has a losing season (represented by \( L = 1 \)).