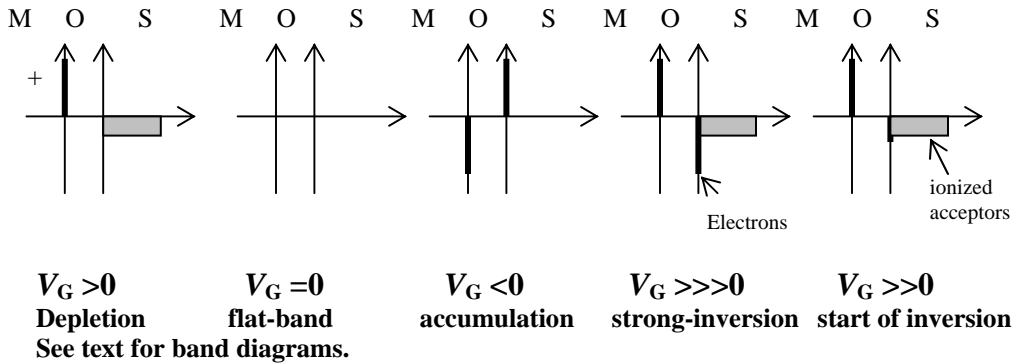
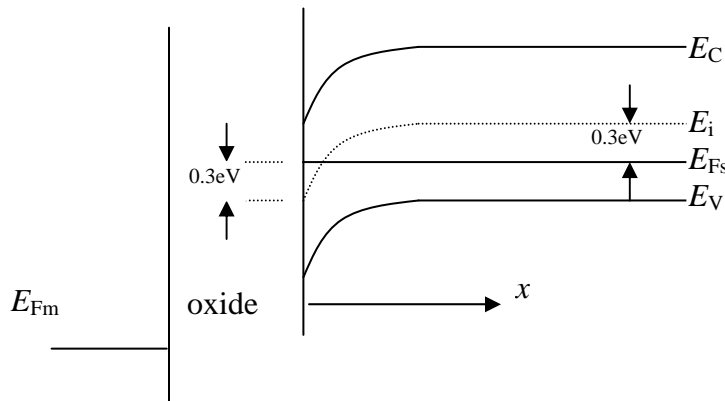


ECSE-2210 Microelectronics Technology
Fall 2005
Class Activity 25

1. Following are five figures showing charge density plots in ideal metal-oxide Si (p-type) structures. Identify whether the voltages applied to the metal gate are $V_G < 0$ or $V_G \ll 0$ or $V_G = 0$ or $V_G (= V_T) > 0$ or $V_G \gg 0$ for each case. Identify which one is accumulation or depletion or flat-band or start of inversion or strong inversion. Qualitatively draw the band diagram for each case.



2. An MOS capacitor is made from Si. When V_G is applied to the gate of the capacitor, the band diagram looks as shown below. Oxide and metal parts are not shown. Answer the questions. (see next page).



- a. Is the applied voltage V_G positive or negative? Explain.

