

EE 421 / ELG 621

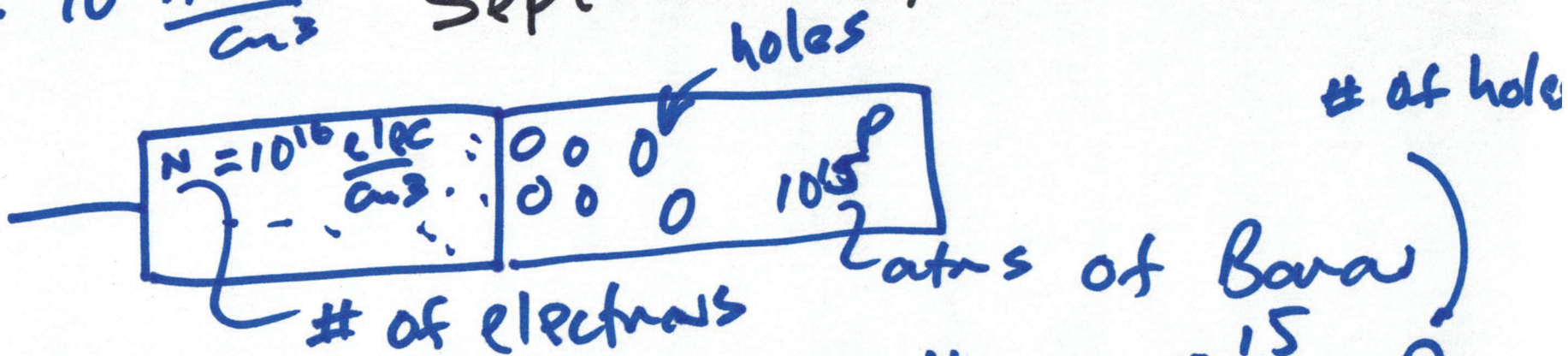
Digital IC Design

Lecture 4

September 11, 2023

n_i density $10^{22} \frac{\text{atoms}}{\text{cm}^3}$

$P \rightarrow 10^{16} \frac{\text{atoms}}{\text{cm}^3}$



$N_A = 10^{15} = P$
of acceptors

$N_D = 10^{16} \frac{\text{atoms}}{\text{cm}^3}$

of donors
donor atoms of P

Complete ionization

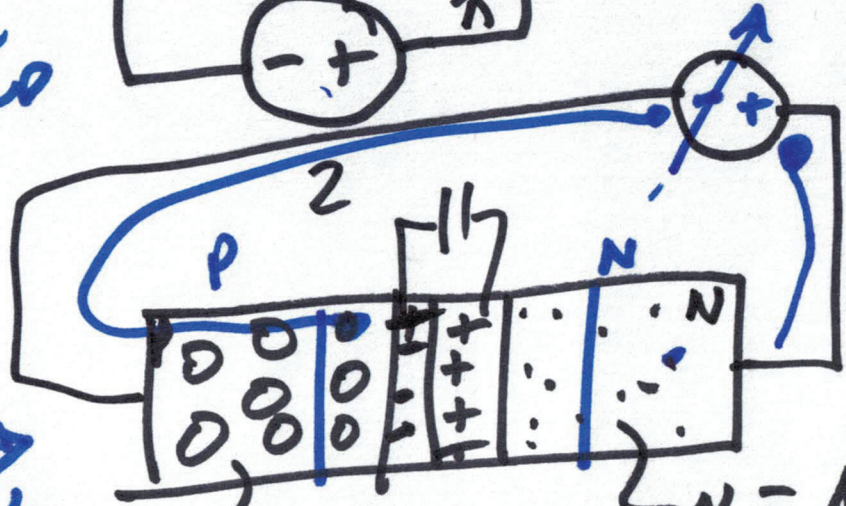
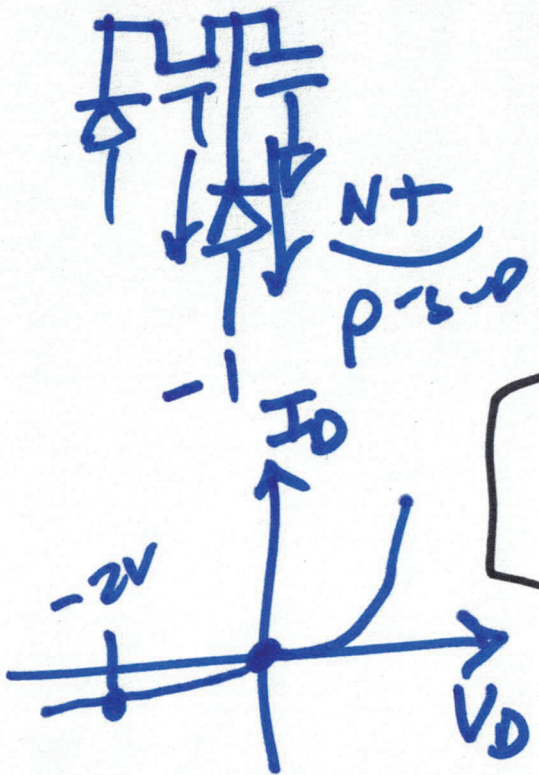
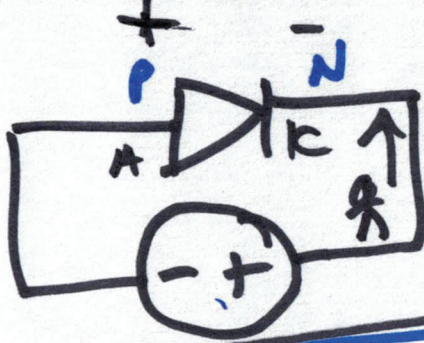
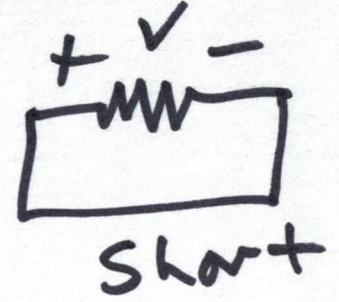
RAMATIC

depletion region

$V_D =$

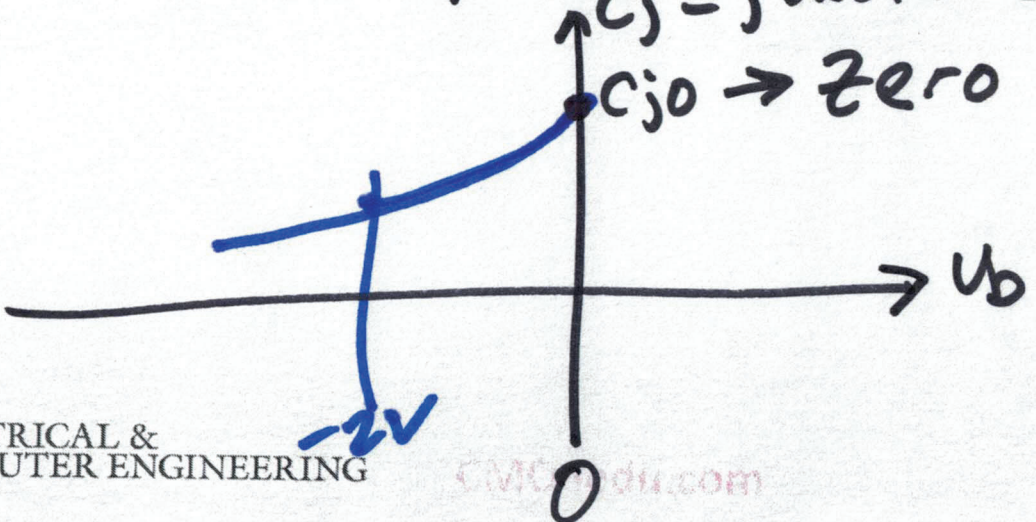
$V_D + 2 = 0$

$V_D = -2V$



$p = N_A$ $n = N_D$
 $C_j = \text{junction C}$

$C_{j0} \rightarrow$ zero bias junction CAP



2)

