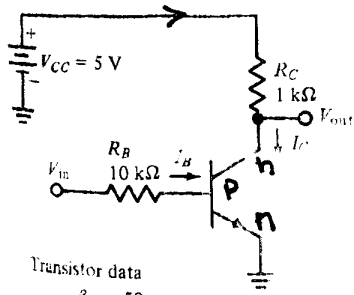
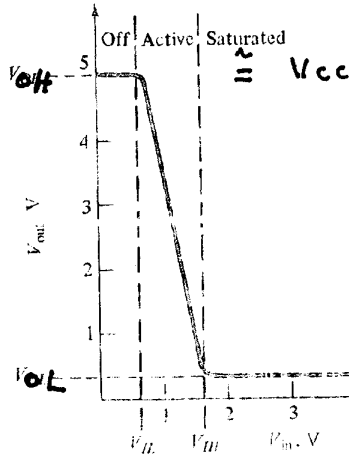


# Transistor Inverter - Digital Application



Transistor data  
 $\beta_F = 50$   
 $V_{BE(on)} = V_{BE(sat)} = 0.7\text{ V}$   
 $V_{CE(sat)} = 0.2\text{ V}$

(a)



$I_C \approx 5 / 10^3 = 5\text{ mA}$

$I_C \approx 5\text{ mA} = I_B \beta$

$\therefore I_B \approx \frac{5\text{ mA}}{50} = 100\text{ }\mu\text{A}$

$V_{in} \approx 0.7 + 10\text{ k}\Omega \times 100 \times 10^{-6}$

$\approx 0.7 + 1 \approx 1.7\text{ V}$

$I_C \approx I_B = 0$   
 base just barely on  
 $\therefore V_{in} \approx 0.7\text{ V}$

