

Homework # 3

Due date: Nov. 3 (Thursday)

[Textbook]

Prob. 6.3, 6.6 (b)

Exercise 7.10 (a) (b)

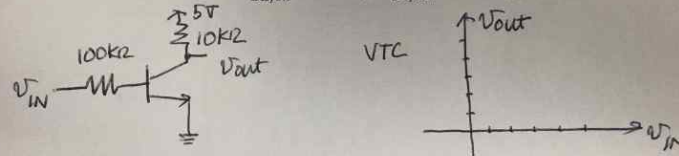
Problem 7.2 (a) (c), 7.14, 7.17

Problem 9.1, 9.4

[Previous exams] 2019. 2nd exam

1. [15 points] 다음 BJT 인버터 회로에 대해서 물음에 답하시오.

Bipolar transistor characteristics: $V_{BE,on} = 0.7\text{ V}$, $V_{CE,sat} = 0.2\text{ V}$, $\beta = 100$



(a) [10 points] Bipolar 회로의 VTC (Voltage transfer characteristics)를 도시하여라. Bipolar junction transistor의 동작 영역이 바뀌는 부분을 정확히 명시하여라.

Draw the VTC (Voltage transfer characteristics) of the BJT(bipolar junction transistor) inverter. Specify the voltage levels when the BJT changes its operation region.

(b) [5 points] BJT inverter를 증폭기로 사용하는 경우의 전압이득을 구하고 NMOS inverter 보다 증폭기로써 BJT 인버터가 더 좋은 이유를 설명하여라. Find the voltage gain when the BJT inverter is used as an amplifier and explain why it is better than the NMOS inverter as an amplifier.