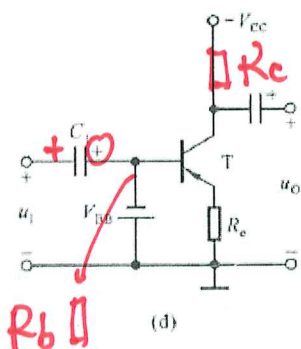
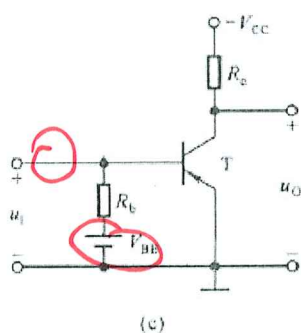
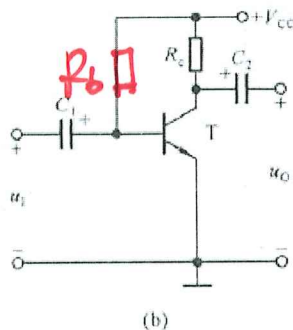
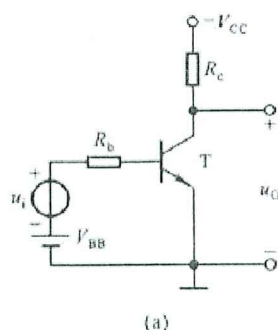


EE3122 Analogue Circuit Fundamentals Tutorial 2

Q1. Discuss whether it is possible that the circuits shown below can amplify AC signal. If not, how can we modify the circuit diagram for AC signal amplification?



(1) $-V_{CC} \rightarrow +V_{CC}$
base

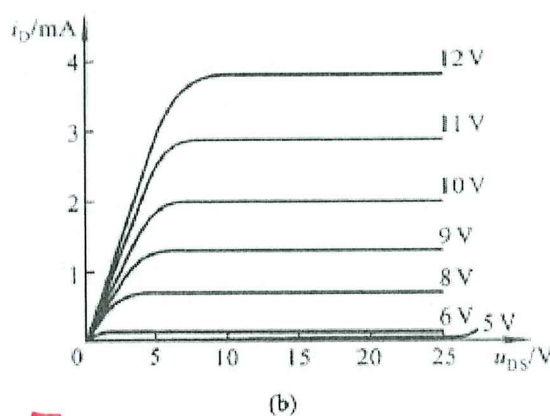
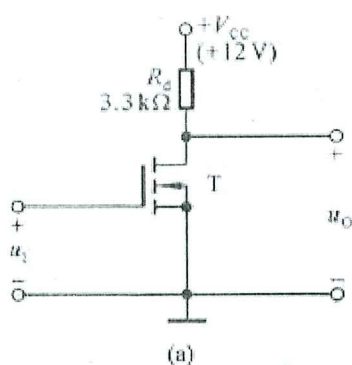
(2) R_b (current can't be too large)

(3) $V_{BB} \rightarrow \frac{1}{2} V_{BB}$

Add capacitor/resistor at input.

(4) R_c , capacitor and R_b

Q2. Given the circuit diagram and the corresponding i-v curve of the transistor, discuss the operation region of the transistor for $u_i = 4V, 8V, 12V$.



N-channel MOSFET

(1) $u_i = 4V < 5V$, cut-off

(2) $u_i = 8V$, assume T in Saturation region

$u_{DS} = V_{DD} - i_D R_D = 10V > (V_{GS} - V_{Th}) = 3V$.
Assumption holds!

(3) $u_i = 12V = V_{CC}$ Triode region.