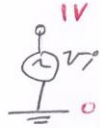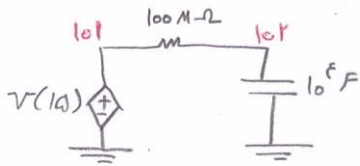$\beta_{pnp} = \beta_{npn} = 100$

$V_{A_{pnp}} = V_0 \, V$

$V_{A_{npn}} = 100 \, V$

$$A_{v_d} = A_{v_1} \times A_{v_2} \times A_{v_3} = -G_m \left(\frac{\beta r_{o_{11}}}{2} \parallel \beta(0.V K \parallel r_{\pi_{10}}) \parallel r_{o_9} \left(\frac{1 + g_m \, 6 V/6 K}{1 + g_m \, 6 V 6} \right) \right)$$

$$\times (+) \frac{0.V K \parallel r_{\pi_{10}}}{0.V K \parallel r_{\pi_{10}} + r_{e_{16}}} \quad \times (-) g_m \, r_{o_{14}}$$

$$A_{v_d} = \frac{1}{25} (V500K \parallel 56.7K \parallel 16259K) \times 0.99 \times \frac{1}{25} \times (100K \parallel V0K) = 2.97 \, M$$

Common mode: $G_m = \frac{g_m}{1 + g_m R_E} = \frac{g_m}{1 + g_m \, 2 r_{o6}} = V.16 \times 10^{-V}$

$A_{vc} = G_m \times (V5\overset{K}{0} \parallel 56.7K \parallel 16259K) \times 0.99 \times \frac{1}{25} \times (100K \parallel V0K) = V3.VV$

CMRR: $\frac{A_{vd}}{A_{vc}} = 53681.6$

Swing: $-2.5 < V_0 < 2.5 - V_{ce(sat)} \longrightarrow -2.37V \, V_0 < 2.3 \, V$
$\quad\quad\quad + V_{ce(sat)}$

$\longrightarrow$ Swing = $6.6 \, V$

CMR: $-2 < V_2 < 2.5 - V_{ce(sat)} \longrightarrow -1.8 < V_2 < 2.3$
$\quad\quad\quad + V_{ce(sat)}$

$\quad\quad\quad\quad\quad\quad\quad\quad -2.5 < V_C < 1.6 \longrightarrow$ CMR: $6.1 \, V$ P-P