

## QUIZ NO. 4

NAME \_\_\_\_\_ Score \_\_\_\_\_ /10

A PNP BJT common-emitter inverting amplifier is shown. Assume the parameters of the transistor are  $\beta_F = 50$ ,  $V_T = 25\text{mV}$ , and  $V_A = 100\text{V}$ . (a.) Find the small signal model parameter values for  $g_m$ ,  $r_\pi$  and  $r_o$  (ignore  $V_{EC}$  in the calculation of  $r_o$ ). (b.) Find an algebraic expression for the small signal voltage gain,  $v_{out}/v_{in}$ , the input resistance,  $R_{in}$ , and the output resistance,  $R_{out}$ . (c.) Numerically evaluate the small signal voltage gain,  $v_{out}/v_{in}$ , the input resistance,  $R_{in}$ , and the output resistance,  $R_{out}$ .

