h-parameters of a single stage CE amplifier are given as $h_{ie} = 1\ kW$, $h_{re} = 3 \times 10^{-4}$, $h_{fe} = 60\ and\ h_{oe} = 25\ \mu A/V$.
Calculate $Ai, Av\ and\ Zout\ with\ R_s = 100W\ and\ R_L = 10kW$.

Solution.

$$A_i = \frac{-h_{fe}}{1 + h_{oe}R_L} = \frac{-60}{1 + 25 \cdot 10 \cdot 10^3} = -2.4 \cdot 10^{-4}$$

$$A_v = \frac{A_i R_L}{R_i}$$

$$R_i = \frac{-h_{fe}R_L}{R_s + h_{ie}}$$

$$R_i = \frac{-60 \cdot 10 \cdot 10^3}{100 + 1000} = -54.5\ W$$

$$A_v = \frac{-2.4 \cdot 10^{-4} \cdot 10 \cdot 10^3}{-54.5} = 0.044$$

$$Z_{out} = \frac{1}{h_{oe} - \dfrac{h_{re}h_{fe}}{h_{ie}}} = \frac{1}{25 - \dfrac{3 \cdot 10^{-4} \cdot 60}{1000}} = 0.04\ \Omega$$

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