Design an amplifier of the type shown above, which is to drive another amplifier whose input resistance is 10 kΩ, i.e. assume the designed amplifier will have a load resistance $R_L = 10\,\text{kΩ}$ connected between the output and ground. The requirement is to develop 1V across the input of the second amplifier when a voltage source with amplitude $V_S^0 = 10\,\text{mV}$ and frequency 100 Hz, in series with $R_1$ is connected across the input of the amplifier under design. In the design, use the transistor characteristics displayed in DH Fig. 8.5. For the power supply voltage use $V_{CC} = 12\,\text{V}$. Specify $R_C$, $R_E$, $R_1$, $R_2$, input impedance $Z_i$ and output impedance $Z_o$ (as seen by the input of the second amplifier), and the value of $R_S$ to give the desired 1V output.