**P4.10** Design an amplifier of the type shown below, which is to drive another amplifier whose input resistance is $10\,k\Omega$, i.e. assume the designed amplifier will have a load resistance $R_L = 10\,k\Omega$ connected between the output and ground. The requirement is to develop $1\,V$ amplitude across the input of the second amplifier when a voltage source with amplitude $V_S = 10\,mV$ and frequency $100\,Hz$ is connected across the input of the amplifier under design. In the design, use the transistor characteristics displayed below. For the power supply voltage use $V_{CC} = 12\,V$. Specify component values and input and output impedances.