

Physics 321: HW 8

Problems 8.7, 8.8, 8.9, 8.10, 8.12, and 8.17 in Sprott.

Notes:

$$8.8: r_{tr} = r_{ohmic} + (0.026 \text{ ohm-A})/I_E$$

8.10: The circuit is as in fig. 8.6. Choose the quiescent point to allow roughly equal positive and negative voltage excursions on the output. Choose bias resistor values so that the input impedance of your amplifier is as high as possible without having the quiescent point (V_C) shift by more than 0.5 volts if the beta were to go to infinity. Calculate a value for C_B that will make the gain fall off by 3 dB at 25 Hz (this would be called the “lower corner frequency” of the amplifier).

8.12: Note that the problem refers only to “lower-case” variables, so you can just use the small-signal equivalent circuit to get all the answers. Remember that capacitors are shorts and that you should combine resistors if possible to simplify the circuit. For an accurate answer, don't forget to put r_{tr} in your equivalent circuit.