

Tutorial 6

- Q1 For the RC-coupled class-A amplifier shown in Figure 1, determine –
- (i) the total dc power, $P_{i(dc)}$, drawn from the supply, (**0.94W**)
 - (ii) the ac load power, $P_{o(ac)}$, and (**50.8mW**)
 - (iii) the maximum efficiency, η , of the amplifier. (**5.4%**)

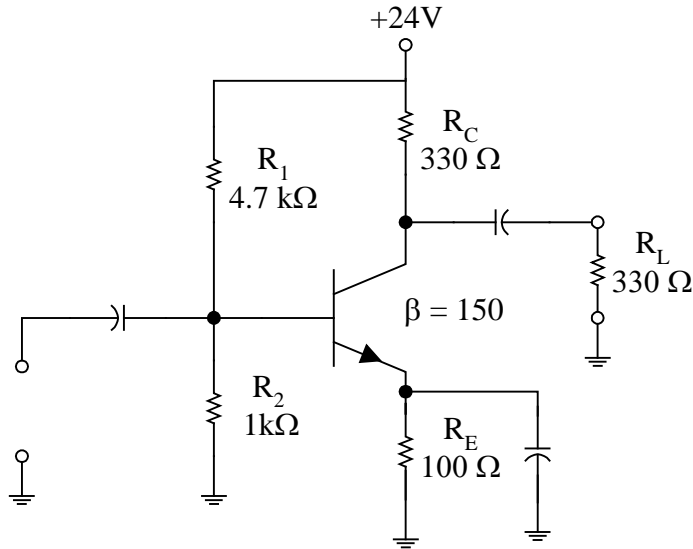


Figure 1

- Q2 For the Transformer-coupled class-A amplifier shown in Figure 2a, the circuit component values results in a dc base current of 6mA, and the input signal (V_i) results in a peak base current swing of 4mA. Figure 2b shown the output characteristic for the transistor T_1 . Assume the primary winding resistance and R_E is very small ($\sim 0\Omega$). Determine –
- (i) the total dc power, $P_{i(dc)}$, drawn from the supply, (**1.4W**)
 - (ii) the dc and ac load line,
 - (iii) the output compliance, (**5.53V**)
 - (iv) the ac power delivered to the 8Ω speaker and (**0.47W**)
 - (v) the maximum efficiency, η , of the amplifier. (**34%**)
- Derive the maximum theoretical efficiency for a transformer-coupled class-A amplifier. (**50%**)

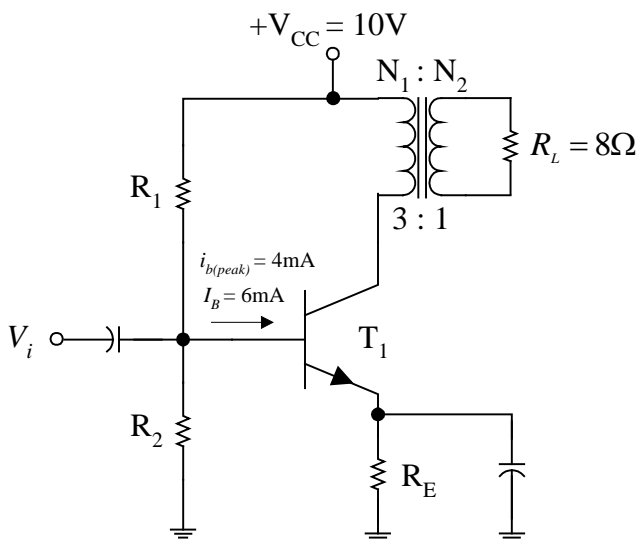


Figure 2a

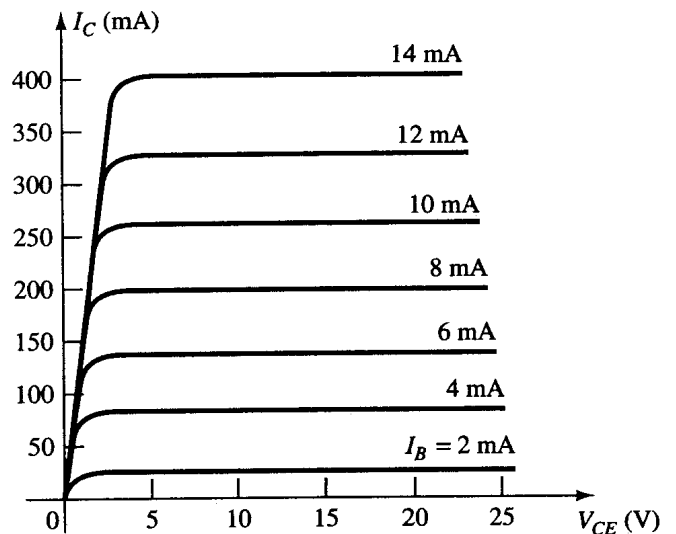


Figure 2b

Tutorial 6

Q3 For the class-AB amplifier shown in Figure 3, determine –

- (i) the values of V_{CEQ} , $V_{B(Q1)}$, $V_{B(Q2)}$ and (**10V, 10.7V, 9.3V**)
- (ii) the maximum efficiency of the amplifier. (**78%**)

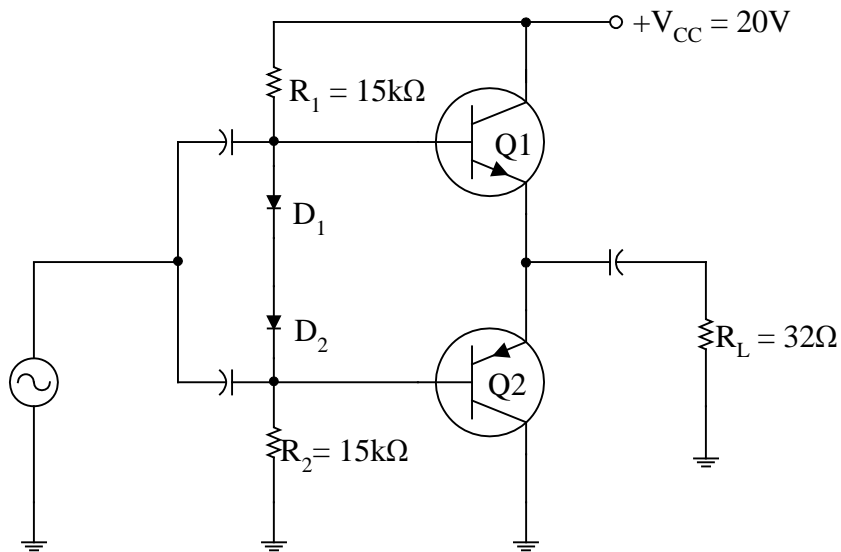


Figure 3