1- For the circuit shown in fig.1
a) Determine the Q-point.
b) What is the maximum peak value of collector current and output voltage that can be realized?
c) Find the voltage gain, power gain, minimum power rating for the transistor, maximum output signal power to the load and efficiency for the amplifier.
2- For the circuit shown in fig.2
a) Determine the dc parameters $V_B(Q1)$, $V_B(Q2)$, V_E, I_CQ, $V_{CEQ}(Q1)$, $V_{CEQ}(Q2)$
b) Determine the approximate input resistance seen by the signal source for the amplifier of $\beta_{ac} = 100$.
c) For the 5 Vrms input, determine the power delivered to the load resistor and what is the efficiency?
3- For the circuit shown in fig.3
a) Determine the dc parameters $V_B(Q1)$, $V_B(Q2)$, V_E, I_CQ, $V_{CEQ}(Q1)$, $V_{CEQ}(Q2)$
b) Assuming the input voltage is 10 V pp, determine the power delivered to the load resistor.
c) What is the maximum power that could be delivered to the load resistor?
4- A certain class C amplifier transistor is on for 10 percent of the input cycle if $V_{ce}(sat)=0.18$ v , $I_c(sat) = 25mA$, VCC=15 V and the equivalent parallel resistance in the collector tank circuit is 50 Ω.
a) what is the average power dissipation for maximum output?
b) What is the maximum peak-to-peak output voltage and Determine the efficiency
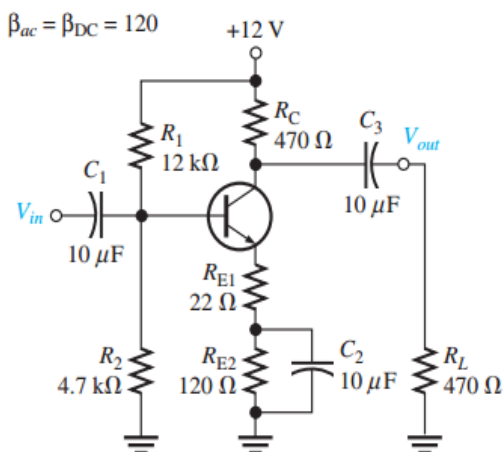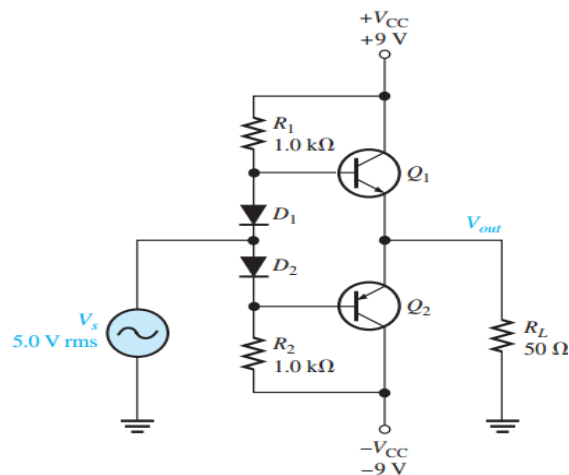c) What is the resonant frequency of a tank circuit with L=10 mH and C=0.001 µF
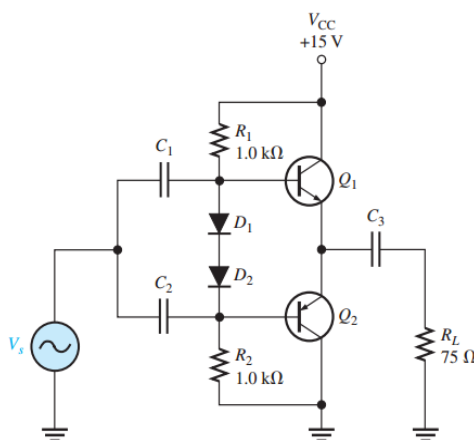

Figure 1

Figure 2

Figure 3