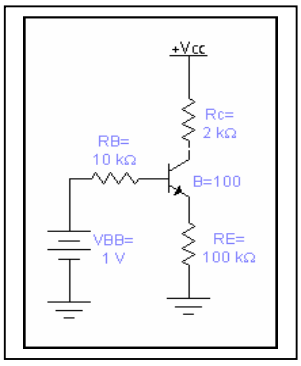
Alexandria University
Faculty of Engineering
Electrical Engineering Department

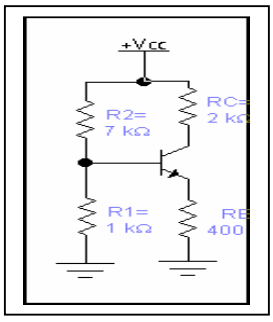
جامعة الإسكندرية
كلية الهندسة
قسم الهندسة الكهربية

Sheet 1
Biasing Circuits

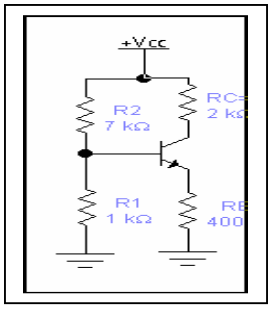
1-Find the location of the Q-point of the amplifier shown in figure,when an npn transistor is used.Assume that Vcc=10V, V_{BB}=1V,R_B=10KΩ,R_C=2kΩ,R_E=100Ω,β=100,V_{BE}=0.7V.What is the new location if R_B=1kΩ.



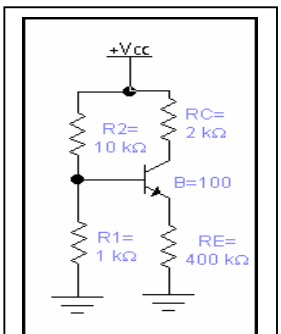
2-Find the maximum peak-to-peak swing of ic in the circuit shown in figure. Assume that R_1=1KΩ,R_2=7KΩ,V_{CC}=24V,R_C=2KΩ, R_E=400Ω,and β=100.Draw the dc load line.



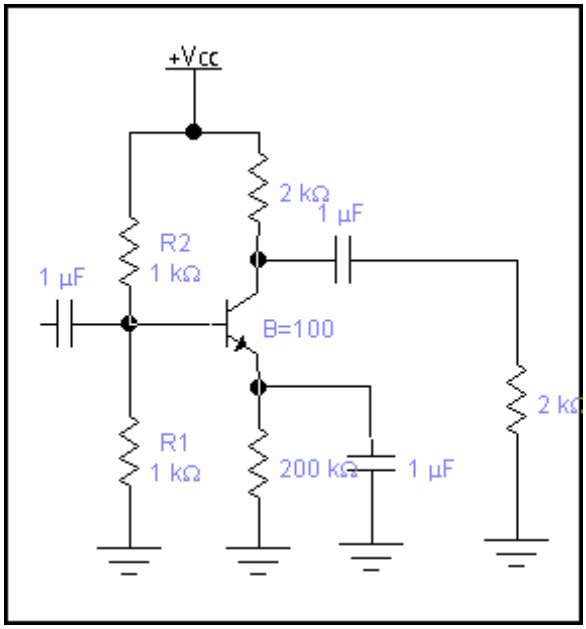
3-With the circuit shown in figure,find the values of R_1,R_2 that yield the maximum possible peak-to-peak swing of ic. Draw the dc load line.



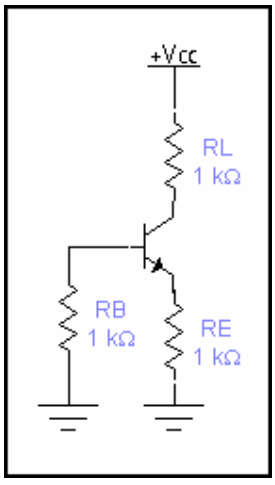
4-For the amplifier of the shown figure,calculate the following:
a-Power supplied by the battery.
b-Power dissipated by R_1,R_2,R_E and R_C.
c-Power dissipated by the collector junction.



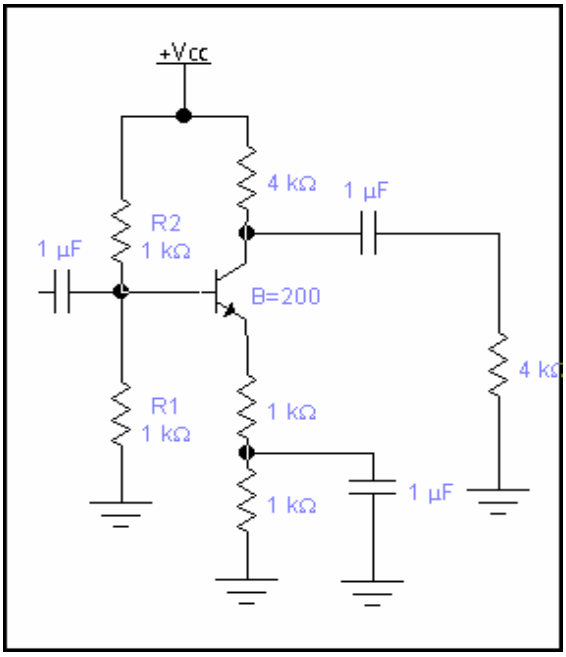
5-For the amplifier shown in circuit:
a-Find the values of R_1 and R_2 for I_{CQ}=8mA.
b-Determine the symmetrical output voltage swing for the values of part a.
c-Draw the ac and dc load lines.
d-Determine the power dissipated by the transistor and that dissipated by R_L V_{cc}=20V.



5-Determine Av, Ai,and Rin for the amplifier shown in figure when:
R_L=R_B=5KΩ, h_{ib}=40Ω, β=300,and R_E is as follows:
a-R_E =1000Ω ,
b-R_E =500Ω ,
c-R_E =100Ω , d-R_E=0.



7-For the circuit shown in figure, select I_{CQ} and V_{CEQ} for maximum symmetrical output voltage swing.
a-Determine the values of R_1 and R_2 in order to achieve this operating point.(Vcc=12v)
b-Find the maximum symmetrical output swing.
c-Determine the power dissipated by the transistor and the power delivered to the load.


+Vcc
4 kΩ
1 µF
R2
1 kΩ
1 µF
B=200
4 kΩ
R1
1 kΩ
1 kΩ
1 µF
1 kΩ