1. When the ac input voltage of a certain power supply changes, the input to the voltage regulator decreases by 5 V as a result, and the output of the regulator decreases by 0.25 V. The nominal output is 15 V. Determine the line regulation in %/V.

2. A certain voltage regulator has a 12 V output when there is no load (I_L = 0) When there is a full-load current of 10 mA, the output voltage is 11.9 V. Express the voltage regulation as a percentage change from no-load to full-load and also as a percentage change for each mA change in load current.

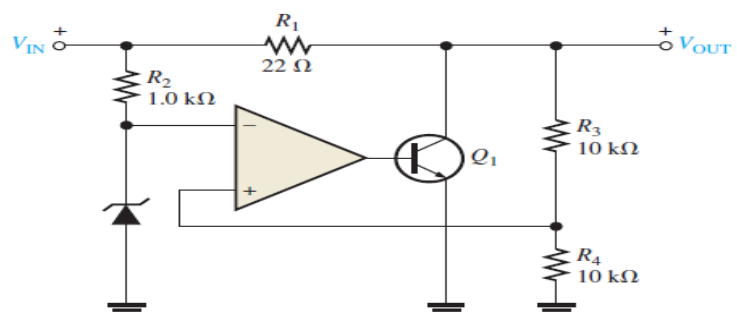3. Determine the output voltage for the regulator in Figure
A 3.3 V zener replaces the 5.1 V zener, R_1 = 1.8 kΩ, R_2 = 22 kΩ, and R_3 = 18 kΩ.What is the output voltage?
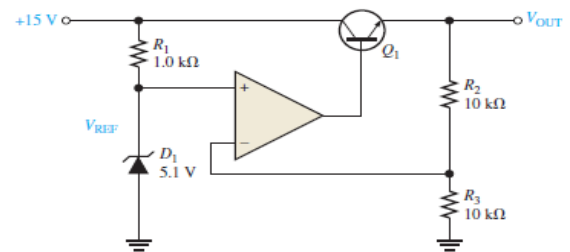
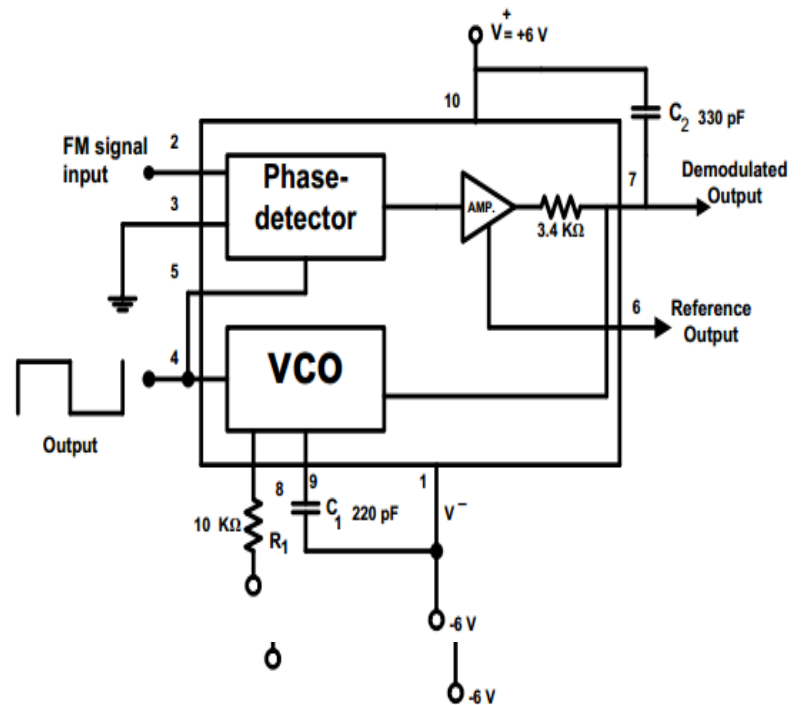4. Determine the maximum current that the regulator in Figure can provide to a load.
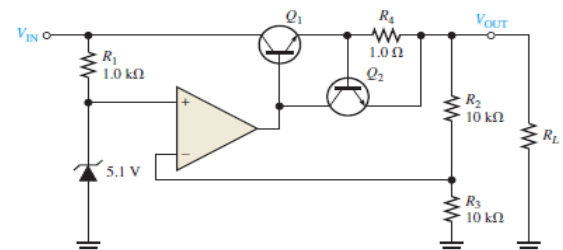
5.What power rating must R_1 have if the maximum input voltage is 12.5 V?.

6. For the circuit shown in Fig, $R_1 = 10\ K\Omega$ and $C_1 = 220\ pF$, Find:
a) The free running-frequency f_0.
b) The lock range f_L.
c) The capture range f_c.

What value of capacitor, C_1 , to obtain a center frequency of 100 KHz.

7. For the circuit shown in Fig, Find: f_0, f_L, f_c.