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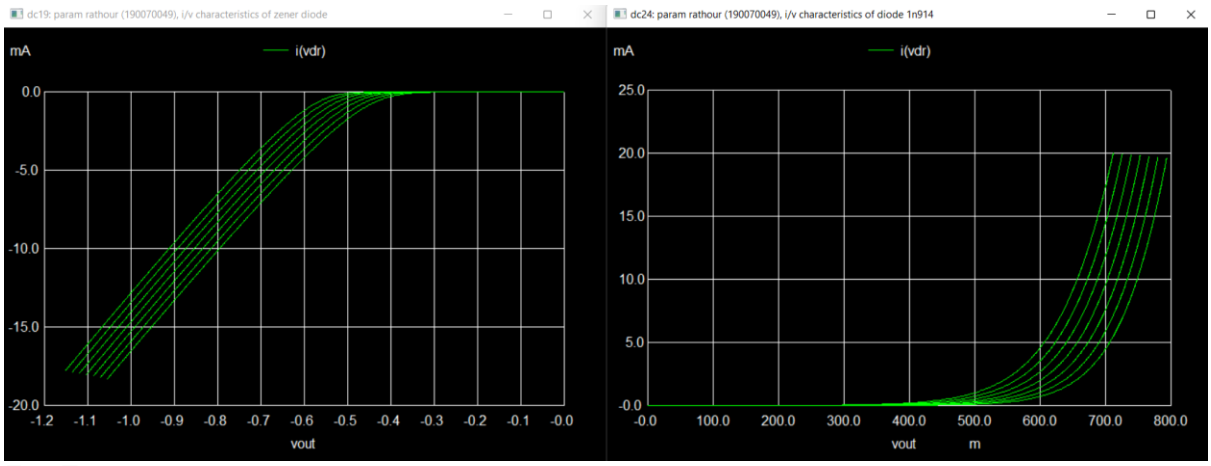
Course: Electronic Devices Lab

Course Code: EE236

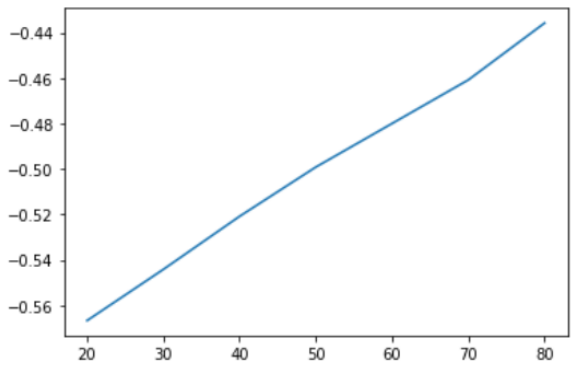
Q1)

Zener (plot decreases as temperature increases) and 1N914 (plot goes leftwards)



For Zener,

```
In [47]: plt.plot(temp, [-0.566667, -0.544167, -0.520833,-0.499167, -0.48,-0.460833,-0.435833])
Out[47]: [<matplotlib.lines.Line2D at 0x23dfb62b548>]
```



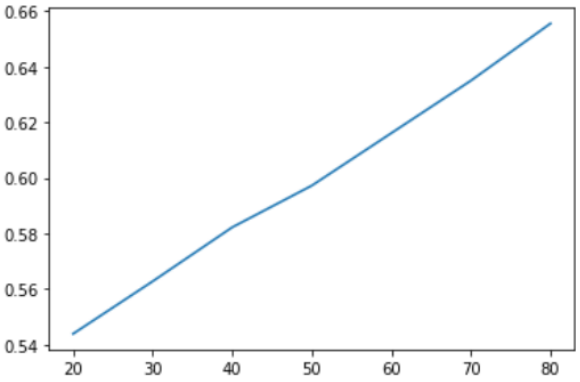
Tempcoff in mV/C

```
In [50]: tempcoeff = (-0.566667-(-0.435833))/(20-80)
         tempcoeff

Out[50]: 0.002180566666666667
```

For 1N914

T empcoff in mV/C

```
In [54]: plt.plot(temp, [ 0.543889, 0.562778, 0.582222,  0.597222, 0.616111,0.635,0.655556])
         tempcoeff = (0.543889-(0.655556))/(20-80)
         tempcoeff

Out[54]: 0.001861116666666668
```



For both cases voltage across diode increases with temperature (positive TC)

Linear Plots

Q2)

In Voltage Regulator, Zener Diode maintains a steady voltage of 5.6V when R_S ≥ 52.64Ω,

As max 1W power can flow in RS, the maximum possible current flowing through it will be I_S = 1/5.6A

when as breakdown voltage = 5.6V .

So, R_S = (V_S – V_Z)/(I_S) = (12 – 5.6)/(1/5.6) = 35.84ohm

Negative terminal of Opamp is also 5.6V, So,

R_1 = 144kΩ and R_2 = 56kΩ satisfy this, as the output required is 20V