

(attending labs online)

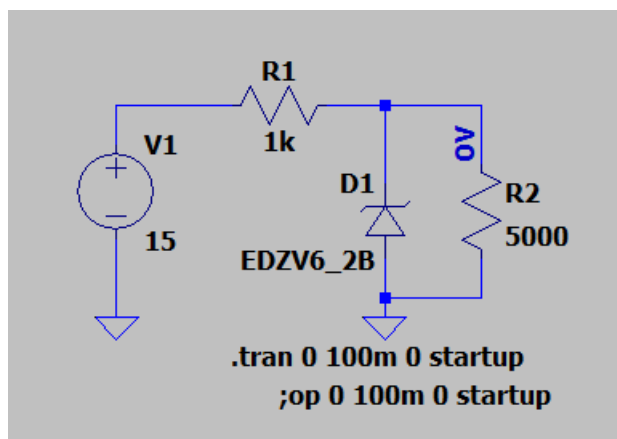
LAB REPORT 1

VOLTAGE REGULATOR USING ZENER DIODE

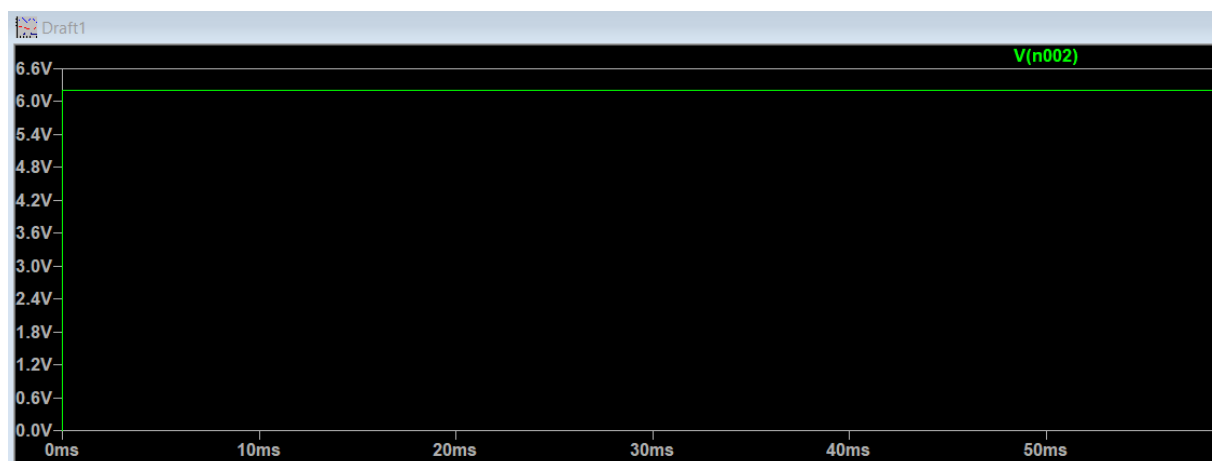
2020102043 – Venkata Ramana M N

- 1) Connect a DC input of 15V, a resistor of $1k\Omega$ and a zener diode rated at 5V . Connect a load resistor R_L across the diode. Draw this circuit in LTSpice & run transient simulation.

LTSpice simulation:



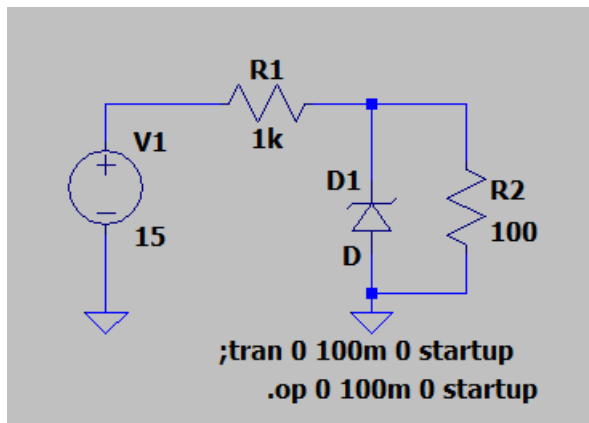
Output voltage across R2:



Output voltage across Zener diode is 6.2 V as the breakdown voltage of Zener diode is 6.2V for the diode in figure.

- 2) Insert a DC input of 15V to the regulator circuit and measure the output voltage across RL. Vary RL from 100Ω to 5KΩ and note how the output voltage is changing (.op).

LTSpice simulation:



Output voltage across R2:

For 100 ohms – 6.2V

For 500 ohms – 6.2V

For 1000 ohms – 6.2V

For 2000 ohms – 6.2V

For 3000 ohms – 6.2V

For 4000 ohms – 6.2V

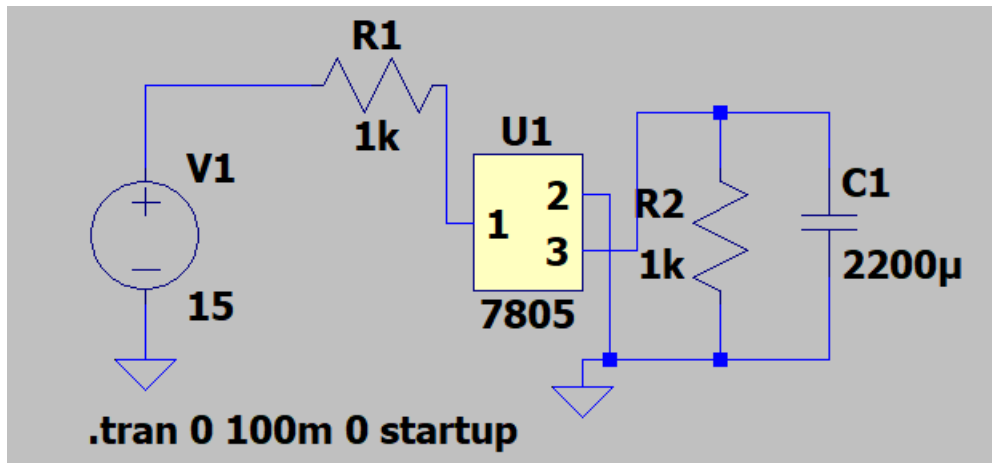
For 5000 ohms – 6.2V

Output voltage remains constant across load resistance because Zener diode maintains constant voltage across its ends.

* C:\Users\venka\Desktop\EW-1\Draft1.asc

--- Operating Point ---		
V(n001) :	15	voltage
V(n002) :	6.19885	voltage
I(D1) :	-0.00756139	device_current
I(R2) :	0.00123977	device_current
I(R1) :	-0.00880115	device_current
I(V1) :	-0.00880115	device_current

3) IC7805 maintains constant voltage across its ends.



Constant voltage of 5V is observed across its ends.