

Pre-lab 2
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ECEN - 214 - 502
February 2, 2023

A) What is the value of V_L ?

1. V_L is the original voltage value. Here $V_L = 0V$.

2. Can you determine the value of R_S or R_L ? If so, why or why not?

The circuit is open, at that time, the value of R_S nor R_L can not be determined.

B)

1. What is the value of R_L ?

$$\textcircled{1} \quad R_L = \frac{V_L}{I_L} \rightarrow \frac{1.5V}{7.5mA} \rightarrow \frac{1.425V}{7.5 \times 10^{-3}A} = \underline{190 \Omega}$$

2. Value of R_S ?

$$\textcircled{2} \quad R_S = \frac{V_S - V_L}{I_L} \rightarrow R_S = \frac{1.5 - 1.425V}{(7.5 \times 10^{-3})A} = \underline{10 \Omega}$$

3. How much power dissipated in R_L ?

$$\textcircled{3} \quad P = I_L^2 R_L \rightarrow P = (7.5mA)^2 (190) \rightarrow (7.5 \times 10^{-3})^2 (190) = 0.0106875W \\ = \underline{10.7mW}$$

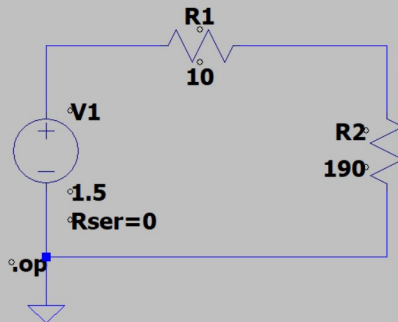
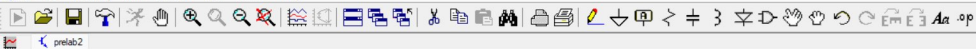
D) $\mathcal{E} = 1.6V$

$$I = \frac{\mathcal{E}}{R} \rightarrow R = \frac{700 \times 10^{-3}}{700 \times 10^{-3}} = \frac{\frac{1.6V}{R} \cdot R}{700 \times 10^{-3}}$$

$$\rightarrow R = \frac{1.6V}{700 \times 10^{-3}} = \underline{2.286 \Omega}$$

Source Voltage = 1.6V

Internal Resistance = 2.286 Ω



* C:\Users\jewel\AppData\Local\LTspice\prelab2.asc

--- Operating Point ---

V(n001):	1.5	voltage
V(n002):	1.425	voltage
I(R1):	-0.0075	device_current
I(R2):	-0.0075	device_current
I(V1):	-0.0075	device_current