Post lab Assignment 2.

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1. 0 Since the switch is off

2 The DMM voltage shows the same value as the internal power supply voltage.

Which is 2.4930 V

3. $I_{load} = V_{load} / R = 2.0V / 10\Omega = 0.2A$

4. $R_S = \frac{V_{open} - V_{load}}{I_{load}} = (2.5V - 2.0V) / 0.25A = 2\Omega.$

5. $P_{max} = \frac{V_{open}^2}{4R_S} = 0.78125\,W$

6. $P_{actual} = V_{open} * I_{max} = 2.5V \times 500mA = 1.25W$

$P_{max} = 0.78125W < P_{actual} = 1.25W \Rightarrow$ No, not able to deliver

7. $R_{bottom} = \left(\frac{1M \times 330K}{1M + 330K}\right)\Omega = 248\,K\Omega$

$V_{node2} = \frac{R_{bottom}}{R_{bottom} + R_{top}} V_{ac} = \left(\frac{0.248M}{0.248M + 1M}\right) \times 240\,V_{rms} = 41.69\,V_{rms}$

8. $V_{input} = 240V$ $R_{top} = 10K\Omega$. $R_{bottom} = 25.6k\Omega$

$R_{total} = R_{top} + R_{bottom} = 35.6k\Omega$ $P = \frac{V_{input}^2}{R_{total}} = \frac{(240V)^2}{(25.6k\Omega)} = 1.62W$

9. $R_{equ} = \left(\frac{330K \times 9M}{330K + 9M}\right) = 318.4k\Omega$ $V_{node2} = \left(\frac{318.4K\Omega}{318.4k\Omega + 1M\Omega}\right) \times 240V_{rms} = 57.94V_{rms}$

10. The oscillation range is $150\,V_{rms}$, $57.94\,V_{rms} < 150\,V_{rms} \Rightarrow$ Within