Problems cover, Thevenin and Norton equivalent circuits, superposition and maximum power transfer.

**Problem 1**

Given:
- \( R_1 = 2 \) \( \Omega \)
- \( R_2 = 5 \) \( \Omega \)
- \( R_3 = 10 \) \( \Omega \)
- \( R_L = 20 \) \( \Omega \)
- \( I_S = 2 \) A
- \( V_S = 20 \) V

Find: \( R_T, V_T, I_N \) Independently

Do Not Use \( V_T = R_T I_N \)

**Problem 2**

Given:
- \( R_1 = 5 \) \( \Omega \)
- \( R_2 = 4 \) \( \Omega \)
- \( R_3 = 9 \) \( \Omega \)
- \( I_S = 10 \) A
- \( R_3 \) is the load resistor

Find: \( R_T, V_T, I_N \) Independently

Do Not Use \( V_T = R_T I_N \)

**Problem 3**

Given:
- \( R_1 = 6 \) \( \Omega \)
- \( R_2 = 12 \) \( \Omega \)
- \( R_3 = 3 \) \( \Omega \)
- \( R_4 = 4 \) \( \Omega \)
- \( R_5 = 6 \) \( \Omega \)
- \( V_S = 72 \) V
- \( R_5 \) is the load resistor

Find: \( R_T, V_T, I_N \) Independently
**Problem 4**

Given:
- $R_1 = 3 \, \Omega$
- $R_2 = 2 \, \Omega$
- $R_3 = 5 \, \Omega$
- $I_s = 2 \, \text{A}$
- $V_s = 10 \, \text{V}$

Find: $V_{R_2}$ via superposition

**Problem 5**

Given:
- Using the Thevenin equivalent circuit (voltage divider) and the values for $V_T$ and $R_T$ found in Problem 1.

Find:
- The equation for the power absorbed by the load in terms of $V_T$, $R_T$ and $R_L$.
- Plot the power to the load for $R_L$ – chose the range so it is reasonable and you see a maximum.
- What is the value of $R_L$ for maximum power delivered to the load?