Pre-labs

Exp 1:

Lab 1: No pre-lab

Lab 2: Calculate equivalent resistance between A and B.

Lab 3: Calculate voltage of R_1 and R_2.

Lab 4: Calculate voltage and current of R_1, R_2 and R_3.

Exp 2:

Lab 1: Voltages and currents of all resistors.

Lab 2: Voltage and current of R_L, Thevenin voltage, Norton current, Thevenin resistance.

Exp 3:

Lab 1:

- Voltage and current of the 470-Ω resistance, while both voltage supplies are on.
- Voltage and current of the 470 Ω resistance, while shorting +5 V supply.
- Voltage and current of the 470 Ω resistance, while shorting -5 V supply.
- Does the superposition principle hold?

Lab 2: No pre-lab for this part. Read the lab manual to get prepared.

Exp 4:

Lab 1:

- Calculate the 3dB frequency (cut-off frequency) of all the circuits.
- Plot the magnitude and phase bode-diagrams of $\frac{V_o}{V_s}$ (for all the circuits).

Exp 5:

Lab 1:

- With L = 150 mH and f_r = 4.1 kHz, find the capacitor value (C).
- With the C found in the last part, find the resistor value such that the 3dB bandwidth = 2.3 kHz.

Lab 2: No pre-lab for this part. Read the lab manual to get prepared.

Exp 6:

Lab 1: Find the time constant (τ) for R-C and C-R circuits with R = 33 kΩ and C = 4.7 nF.

Lab 2: Find the time constant (τ) for R-L and L-R circuits with R = 1 kΩ and L = 150 mH.

Lab 3: Find the notch frequency of a Twin-T filter, where R = 26.5 kΩ and C = 0.1 μF.

Exp 7:

Lab 1: Find $\frac{V_o}{V_s}$ for both circuits in Fig. 6.

Lab 2: For V_{in} = 1 V, 1kHz:

- Find $\frac{V_o}{V_{in1}}$ and V_o, when $V_{in2} = 0$.
- Find $\frac{V_o}{V_{in2}}$ and V_o, when $V_{in1} = 0$.
- Find V_o, when $V_{in1} = V_{in2}$.
- Find V_o, when $V_{in1} = -V_{in2}$.

Lab 3: Find the period and frequency of the oscillation for the circuit in Fig.9.