1. Find the Norton equivalent of the network at terminal A-B in Figure 1. [10]

2. A periodic pulsating current source, $i(t)$, is applied to a 12 Ω resistor as shown in Figure 2. Please determine a)the average current I_{avg}, b)the rms current I_{rms}, and c)the power absorbed by the 12 Ω resistor. [15]

3. Use **superposition** to find the output voltage V_o in Figure 3. [25]

4. The ideal switch in Figure 4 is opened at t=0. Please determine the inductor current $i_L(t)$ for t>0. [25]

5. Two motors, M1 and M2, are operated the 240Vrms, 60 Hz as shown in Figure 5. The M1 consumes 36 kW with power factor 0.82 lagging, and the M2 consumes 48 kW with power factor 0.88 lagging. The transmission line impedance is (0.1+j0.3) Ω. a)Determine the demanded input voltage source V_s, b)Find the power factor at the load terminal A-B. c) Determine the capacitance, C, that can be connected to the load terminal to improve the load terminal power factor to 0.95 lagging. [25]

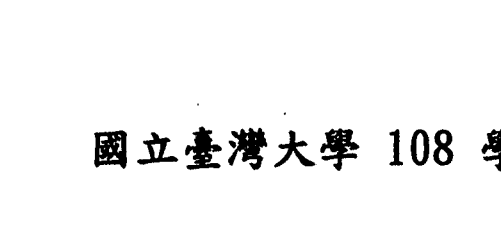

Figure 1

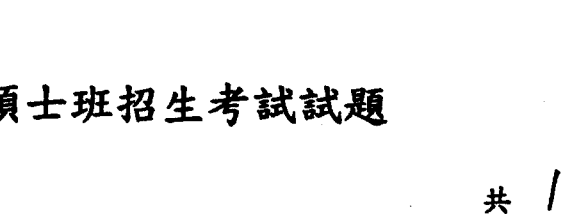

Figure 2

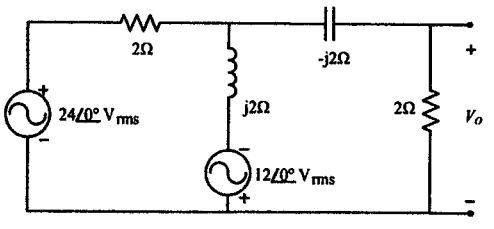

Figure 3

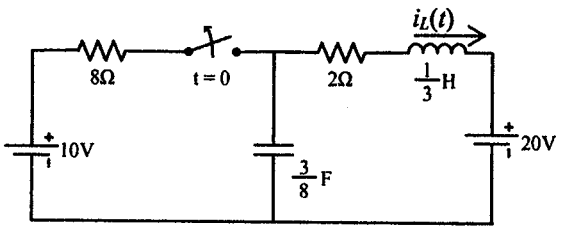

Figure 4

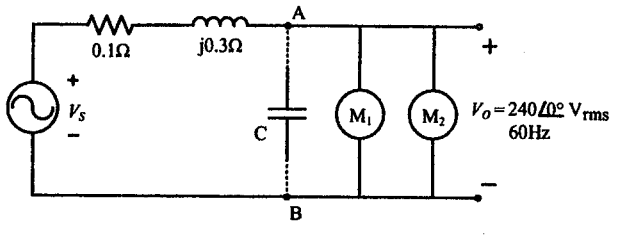

Figure 5

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