ECE 2260
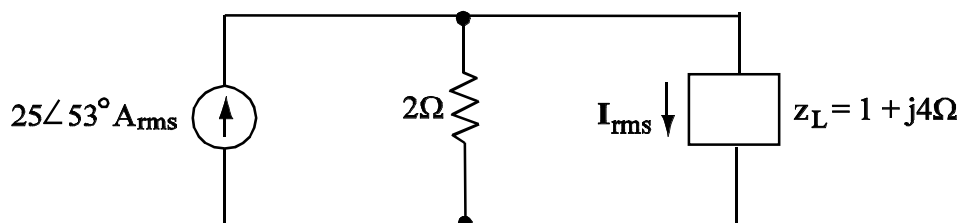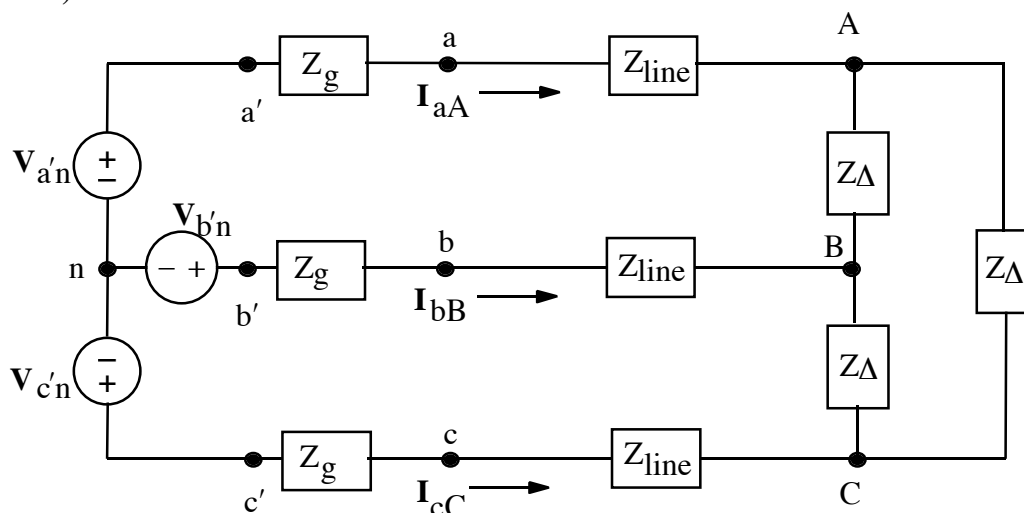N. Cotter

UNIT 4
PRACTICE EXAM

THE
UNIVERSITY
OF UTAH

1. (30 points)

a. Calculate the value of rms current, $\mathbf{I}_{rms}$, flowing through z_L.

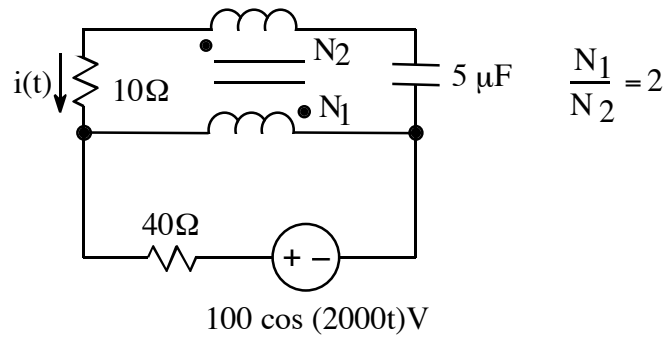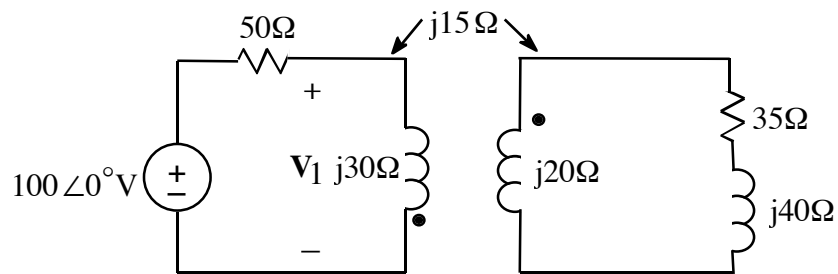b. Calculate the complex power, S, for z_L. Include appropriate units.

2. (30 points)

Balanced three-phase, positive-sequence system

$\mathbf{I}_{aA} = 15 \angle 0°\text{A}$ $\qquad$ $Z_g = (0.2 + j0.2)\Omega$

$\mathbf{V}_{aA} = 22.5 \angle 53.13°\text{V}$ $\qquad$ $Z_\Delta = (30 + j24)\Omega$

a. Draw a single-phase equivalent circuit.

b. Calculate $\mathbf{I}_{AB}$.

3.   (40 points)

i(t) 10Ω N2 N1 5 µF $\dfrac{N_1}{N_2} = 2$

40Ω

100 cos (2000t)V

a.   Write a numerical time-domain expression for the current i(t).

50Ω j15Ω 35Ω

$100\angle 0°\text{V}$ V_1 j30Ω j20Ω j40Ω

b.   Calculate V_1.