ET 332B
Per Unit Homework Problems

1.)  A single phase 60 Hz control voltage transformer is rated at 500 VA, 480-120 volts. It has a total winding impedance in terms of the secondary side of  0.125 +0.355j ohms.  Compute the per unit winding impedance of the transformer based on the transformer power rating and the rated secondary voltage.

2.)  Refer the impedance give in problem 1 to the primary side. Repeat problem 1 using the rated primary voltage as the voltage base.  Compare and comment on the results of the two calculations.

3.)  A 10 kVA, 2400-120 volt transformer has a percent winding impedance of 1.25+2.5J% based on transformer power and voltage ratings.

  a.)  Find the winding impedance in ohms based on the rated transformer primary voltage.
  b.) Find the winding impedance in ohms based on the rated transformer secondary voltage.

4.) The circuit shown below has a base voltage of 120 Vac and a base power of 1000 VA.
  a.) Find the per unit current phasor, $I_c$, flowing through the capacitor.
  b.) Find the per unit voltage drop phasor, $V_L$, across the inductor.
  c.) Convert the per unit values from parts a and b into capacitor current in amps and the inductor voltage in volts.
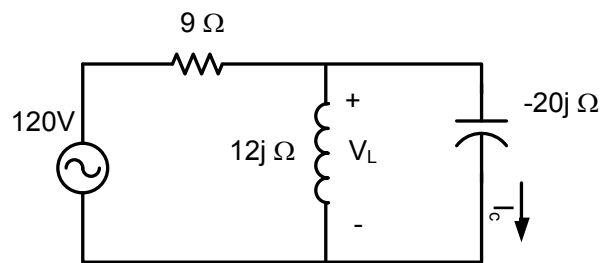


5.) The system below has a base voltage of 240V and a base power of 25 kVA find the source voltage (in actual volts) required to maintain 1 p.u. voltage on the load with the indicated current flowing.