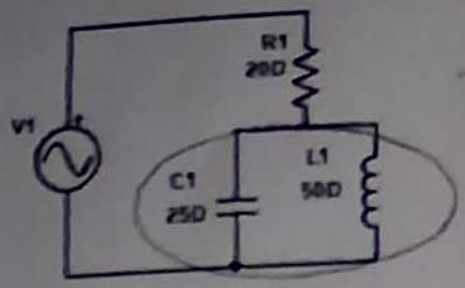
EN-3212 Electronics Worksheet 8

Complex Impedance

For all three
$Z_R = 20\Omega$ $Z_C = -j25\Omega$ $Z_L = j50\Omega$

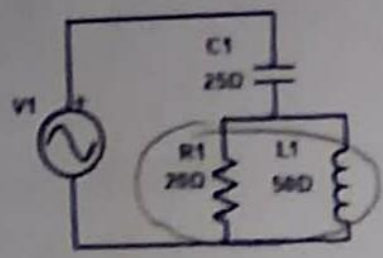
15. Find the total impedance of the circuit shown below



$\rightarrow Z_{eq} = Z_R + Z_A = 20\Omega - j50\Omega$

$Z_A = \left(\frac{1}{Z_C} + \frac{1}{Z_L}\right)^{-1} = -j50\Omega$

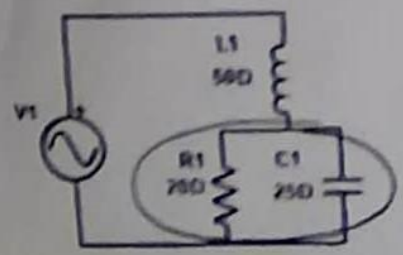
16. Find the total impedance of the circuit shown below.



$\rightarrow Z_{eq} = Z_C + Z_A = 17.24\Omega - j18.10\Omega$

$Z_A = \left(\frac{1}{Z_R} + \frac{1}{Z_L}\right)^{-1} = 17.24\Omega + j6.90\Omega$

17. Find the total impedance of the circuit shown below.



$\rightarrow Z_{eq} = Z_L + Z_A = 12.20\Omega + j40.24\Omega$

$Z_A = \left(\frac{1}{Z_R} + \frac{1}{Z_C}\right)^{-1} = 12.20\Omega - j9.76\Omega$