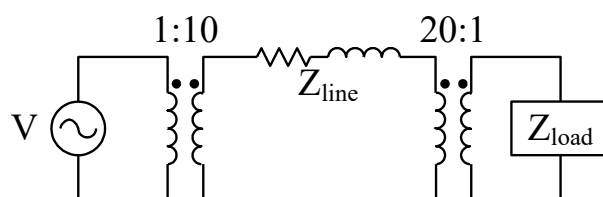
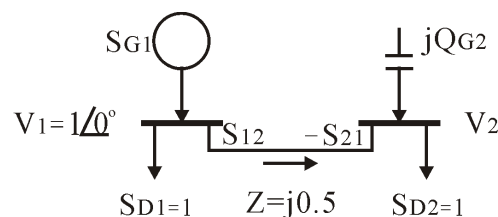


2022/04/19 電力工程導論 姓名_____ 學號_____

1. (10) Compare DC power system with AC power system.
2. (10) Compare AC single phase voltage with three phase voltage.
3. (10) A generator will be paralleled with a running AC power system. Which conditions are required for paralleling?
4. (10) Plotting the generator phasor diagrams under (a) lagging power factor; (b) unity power factor; (c) leading power factor.
5. (20) A simple power system is shown in figure. This system contains a 480V(0°)/60Hz generator connected to an ideal 1:10 step-up transformer, a transmission line, an ideal 20:1 step-down transformer, and a load. The impedance of the transmission line is $Z_{\text{line}} = 20 + j60\Omega$, and $Z_{\text{load}} = 8.66 + j5\Omega$. The base values for this system are chosen to be 480V and 10kVA at the generator.
 - (a) Find the base voltage, current, impedance, and apparent power at every point in the power system.
 - (b) Convert this system to its per-unit equivalent circuit.
 - (c) Find the power supplied to the load in this system.
 - (d) Find the power lost in the transmission line



6. (20) $S_{G1}: V_1 = 1 \angle 0^\circ$, $S_{D1} = 1$, $jQ_{G2}: V_2 = ?$, $S_{D2} = 1$, $Z = j0.5$, (a) Find Q_{G2} for $|V_2| = 1$ (b) and $\angle V_2$? (c) If $Q_{G2} = 0$, could be supplied load S_{D2} ? (d) and $\angle V_2$?



7. (20) Find (a) S_{12} and S_{21} ; (b) P_{12} and $-P_{21}$; (c) Q_{12} and Q_{21} .
 ($Z = R + j\omega L$, $V_1 = |V_1|e^{j\theta_1}$, $V_2 = |V_2|e^{j\theta_2}$, $Z = |Z|e^{j\angle Z}$, $\theta_{12} = \theta_1 - \theta_2$)

