King Fahd University of Petroleum and Minerals

EE 208: Electrical Systems

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Home Work #7

- **1.** A balanced **Y Y** three phase circuit has $V_{an} = 130 \angle 20^{\circ}$. The per phase **impedance** of the load is $\mathbf{Z}_{\mathbf{p}} = \mathbf{10} \ \Omega$. Given that the line impedance is **zero**, find the following.
 - All **phase voltages** of the source. a.
 - All **phase voltages** of the load. c.
 - All line currents. e.

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- g. The **total power** absorbed by the load.
- **2.** A Δ -load has a **20-** Ω resistance in each of its phases. If this load is connected to a three-phase Δ – **connected** generator having a line voltage **V**_{ab} = **208** \angle **0**⁰ V and given that the line impedance is **zero**, find the following.
 - All **phase voltages** of the source. a.
 - All **phase voltages** of the load. C.

All line currents.

All line currents.

e.

e.

e.

- **b.** All **line voltages** of the source.
- **d.** All **line voltages** of the load.
- f. All **phase currents** of the load.

3. A balanced $\Delta - \mathbf{Y}$ three phase system has $\mathbf{V}_{ab} = \mathbf{380} \angle \mathbf{45^{0}}$. Each phase of the load is a 132.5 µF capacitor. Neglecting the line impedance, find the following. The frequency of the source is 60 Hz.

- All **phase voltages** of the source. **b.** All **line voltages** of the source. a.
- All **phase voltages** of the load. c.
- d. All line voltages of the load.
- f. All **phase currents** of the load.
- The total reactive power of the load. g.
- **4.** A balanced **Y** Δ three phase system has **V**_{an} = **100** \angle **30**⁰. The per phase impedance of the load is $\mathbf{Z}_{\mathbf{p}} = \mathbf{3} \Omega$. Given that the **line impedance** is $\mathbf{1}\Omega$, find the following.
 - All **phase voltages** of the source. a.
 - All **phase voltages** of the load. c.
 - All line currents.
 - The **total power** absorbed by the load. g.
- **b.** All **line voltages** of the source.
- **d.** All **line voltages** of the load.
- f. All **phase currents** of the load.

- **b.** All **line voltages** of the source.
- **d.** All **line voltages** of the load.
- f. All **phase currents** of the load.