

King Fahd University of Petroleum and Minerals

Electrical Engineering Department

EE 208: Electrical Systems

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Home Work # 6

1. A balanced **Y – Y** three phase circuit has $V_{an} = 130 \angle 20^\circ$. The per phase **impedance** of the load is $Z_p = 10 \Omega$. Given that the line impedance is **zero**, find the following.
 - a. All **phase voltages** of the source.
 - b. All **line voltages** of the source.
 - c. All **phase voltages** of the load.
 - d. All **line voltages** of the load.
 - e. All **line currents**.
 - f. All **phase currents** of the load.
 - 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 $V_{ab} = 208 \angle 0^\circ$ V and given that the line impedance is **zero**, find the following.
 - a. All **phase voltages** of the source.
 - b. All **line voltages** of the source.
 - c. All **phase voltages** of the load.
 - d. All **line voltages** of the load.
 - e. All **line currents**.
 - f. All **phase currents** of the load.
3. A balanced Δ – **Y** three phase system has $V_{ab} = 380 \angle 45^\circ$. Each phase of the load is a **132.5 μ F capacitor**. Neglecting the **line impedance**, find the following. The frequency of the source is 60 Hz.
 - a. All **phase voltages** of the source.
 - b. All **line voltages** of the source.
 - c. All **phase voltages** of the load.
 - d. All **line voltages** of the load.
 - e. All **line currents**.
 - f. All **phase currents** of the load.
 - g. The **total reactive power** of the load.
4. A balanced **Y – Δ** three phase system has $V_{an} = 100 \angle 30^\circ$. The per phase impedance of the load is $Z_p = 3 \Omega$. Given that the **line impedance** is **1 Ω** , find the following.
 - a. All **phase voltages** of the source.
 - b. All **line voltages** of the source.
 - c. All **phase voltages** of the load.
 - d. All **line voltages** of the load.
 - e. All **line currents**.
 - f. All **phase currents** of the load.
 - g. The **total power** absorbed by the load.