Pre-Lab 3 Three-Phase System Real and Reactive Power

1. A 3-phase load with identical impedance of 300 + j300 at each phase is supplied by a balanced 3-phase source whose line-to-line voltage is 120 V. Find (a) 3-phase real power of the load (P1), (b) 3-phase reactive power of the load (Q1), and (c) power factor of the load.

2. A 3-phase load with identical impedance made of R=300 and XL=300 in parallel at each phase is supplied by a balanced 3-phase source whose line-to-line voltage is 120 V. Find (a) 3-phase real power of the load (P2), (b) 3-phase reactive power of the load (Q2), and (c) power factor of the load.

3. A 3-phase load with identical impedance made of R=300 and XL=200 and XC=250 in parallel at each phase is supplied by a balanced 3-phase source whose line-to-line voltage is 120 V. Find (a) 3-phase real power of the load (P3), (b) 3-phase reactive power of the load (Q3), and (c) power factor of the load.

4. Draw a phase diagram for complex powers of **S**1=P1+jQ1, **S**2=P2+jQ2, and **S**3=P3+jQ3.