Q1)

A single phase electrical load draws 10 MW at 0.6 power factor lagging.

a. Find the real and reactive power absorbed by the load
b. Draw the power triangle.
c. Determine the kVAR of a capacitor to be connected across the load to raise the power factor to 0.95.

Q2)

Two balanced Y-connected loads of $8 + j5\ \Omega$/phase and $6 - j2\ \Omega$/phase are suupplied by a three-phase source at a line-to-line voltage of 440V. Find:

a. The line current drawn by each load.
b. The total line current supplied by the source.
c. The real, reactive, and complex power absorbed by each load
d. The real, reactive, and complex power supplied by the source

Q3)

A 345-kV, three-phase transmission line delivers 500 MVA, 0.866 power factor lagging, to a three-phase load connected to its receiving end terminals. Assume that the load is delta connected and the voltage at the receiving end is 345 kV.

a. Find the complex load impedance per phase.
b. Calculate all line currents and phase currents.
c. Find the real and reactive power per phase.
d. Find the total real and reactive power.

Q4)

A phree-phase substation bus supplies two Y-connected loads that are connected in parallel through a phree-phase feeder with an impedance of 0.5 + j2.0 Ω /phase. Load 1 draws 50 kW at 0.866 lagging power factor, and load 2 draws 36 kVA at 0.9 leading power factor. The line-to-line voltage at the load is 460V. Find:

a. Impedance of each load per phase.
b. Total line current through the feeder.
c. Line-to-line voltage at the substation bus.
d. Total real and reactive power supplied by the substation.