

The University of Sheffield
Department of Electrical and Electronic Engineering

EEE117 Homework 9

- Q1.** A 11kV_{rms} , three-phase, 3 wire supply is connected to a balanced star-connected load which draws a line current of 50A_{rms} lagging by 20° . Calculate the total power dissipated in the load and the voltage across each leg of the star. Calculate the impedance per phase of the load.
- Q2.** If the load in question 1 is reconnected in delta, what are the new line current, total power and voltage across each leg?
- Q3.** Each phase of a star connected load consists of a 10Ω resistor in series with a $250\mu\text{F}$ capacitor. Calculate the line and phase currents and the total load power and volt-amps, when connected to a 400V_{rms} , 50Hz, three-phase supply.
- Q4.** Each phase of a delta connected load consists of a 30Ω resistor in series with a 0.2H Inductor. Calculate the line and phase currents and the total load power and volt-amps, when connected to a $6.6\text{kV}_{\text{rms}}$, 50Hz, three-phase supply.

(Remember: Unless otherwise stated, voltages quoted are rms line values).

Answers should be handwritten. Please remember to include your name or registration number on your answer sheet.