

RECITATION 03

Problem 01

A single-line diagram of power system shows in the figure below, the rating of the generators and transformers are given below

G1: 25MVA, 6.6kV, $x=20\%$ pu

G2: 15MVA, 6.6kV, $x=15\%$ pu

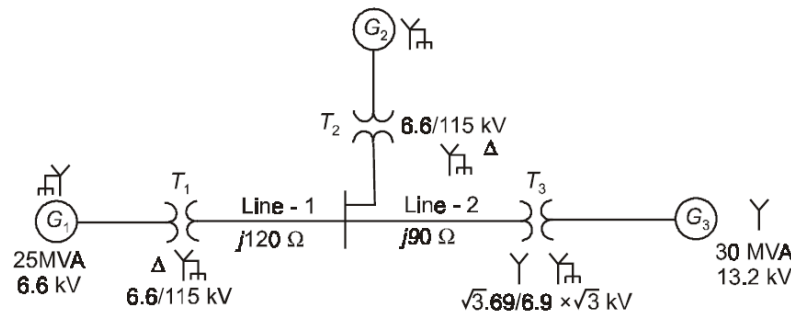
G3: 30MVA, 13.2kV, $x=15\%$ pu

T1: 30MVA, 6.6/115kV, $x=0.10$ pu

T2: 15MVA, 6.6/115kV, $x=0.10$ pu

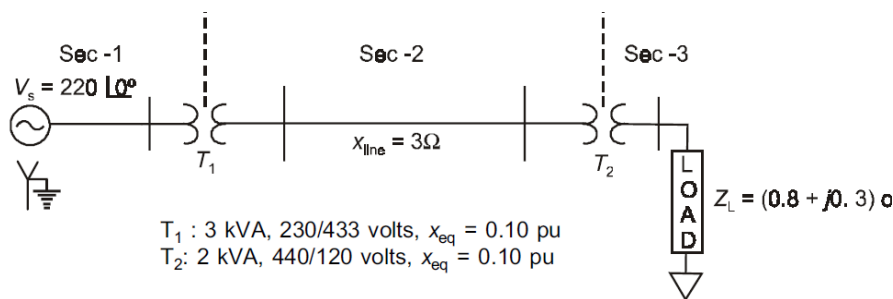
T3: Single-phase unit each rated 10MVA, 6.9/69kV, $x=0.10$ pu

Draw per unit circuit diagram using base values of 30MVA and 6.6kV in the circuit of G1



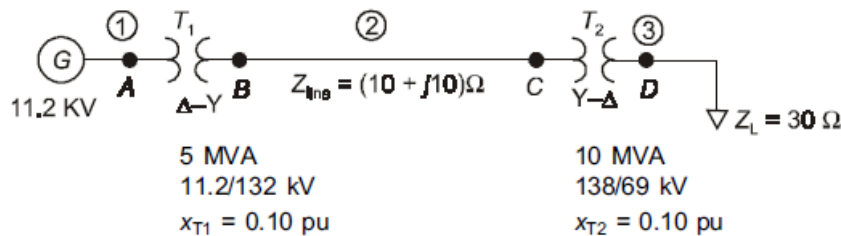
Problem 02

A single line diagram of a single -phase circuit shows Figure below. Using the base values of 3kva and 230 volts? Draw the per-unit circuit diagram and determine the per unit impedance and the per unit source voltage. Also calculate the load current both in per unit and in Amperes.



Problem 03

The figure below shows a sample power system network. Find the current supplied by the generator, the transmission line current, the load current, the load voltage and the power consumed by the load



Problem 04

The reactance of a generator designated x'' is given as 0.25pu based on the generator's nameplate rating of 18KV, 500MVA. The base for calculations is 20KV, 100MVA. Find X'' on the new base.

Problem 05

A 100 MVA, 33KV, three phase generator has a reactance of 15%. The generator is connected to the motors through a transmission line and transformers. Motors have rated inputs of 40MVA, 30MVA and 20MVA at 30kv with 20%reactance-each. Draw the per unit circuit diagram.

