ELL 770 – Power System Analysis
Assignment 6

1. Single line diagram of 3 bus power system is as shown in Figure 1. Each generator is represented by an emf behind the subtransient reactance. All impedances are expressed in per unit on common MVA base. All resistances and shunt capacitances are neglected. The generators are operating at no load at their rated voltages. A three phase fault occurs at bus 3 through a fault impedance of $Z_f = j0.19$ per unit. Determine the fault current, bus voltages and line currents during fault.

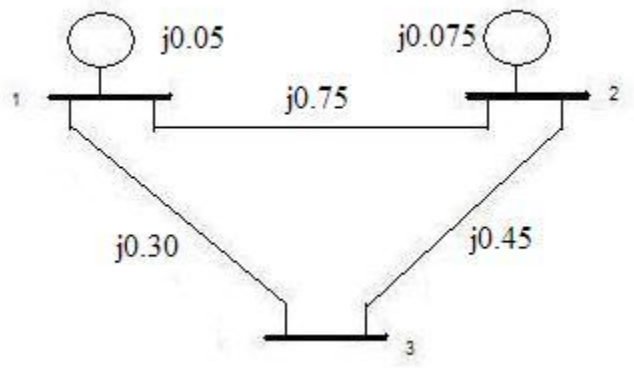

Figure 1

2. The symmetrical components of a set of unbalanced three phase currents are $I_a^0 = 3\angle -30^\circ$, $I_a^1 = 5\angle 90^\circ$, $I_a^2 = 4\angle 30^\circ$. Obtain the original unbalanced phasors.

3. The line-to-line voltages in an unbalanced three phase supply are

$V_{ab} = 600\angle 36.87^\circ$

$V_{bc} = 800\angle 126.87^\circ$

$V_{ca} = 1000\angle -90^\circ$

A Y connected load with a resistance of 37 Ω per phase is connected to the supply. Determine

a. The symmetrical components of voltage
b. The phase voltages
c. The line currents

Deadline of submission: 27th December 2020

Mode of Submission: Upload the same on MS Teams