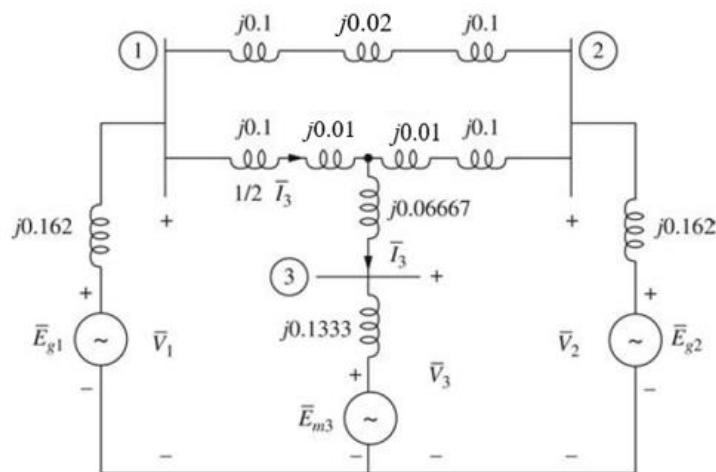# EEE352 Tutorial 1 Answers

NB: Please note that these are only the answers to the questions, the working has no been included. Use them as guidance only.

Q1: Equivalent reactance diagram:

Per-unit positive-sequence reactance diagram

Q2:

(a) VR = 45.9%

(b) At 50 Hz:
V_T =11 kV
S =100 MVA

(c) AT 50 Hz:
VR = 45.9%

Q3:

A = D $= 0.9918\angle 0.0999°$ per unit

B $= 51.1\angle 82.11°\,\Omega$

C $= 3.216\times 10^{-4}\angle 90.033°\,S$

(a) 0.9 lagging

$$V_S = 151.3 \angle 12.98° \, kV_{LN} = 262 \, kV_{LL}$$

VR = 21.2 %

(b) Unity

$$V_S = 136.6 \angle 17.2° \, kV_{LN} = 236.6 \, kV_{LL}$$

VR = 9.43 %

(c) 0.9 leading

$$V_S = 118.9 \angle 19.1° \, kV_{LN} = 205.9 \, kV_{LL}$$

VR = -5.6%