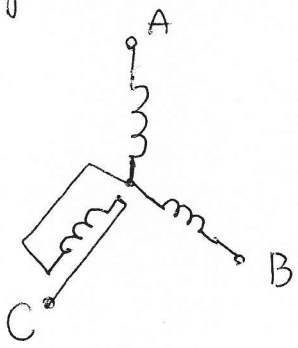
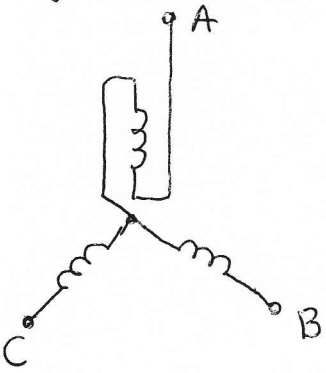
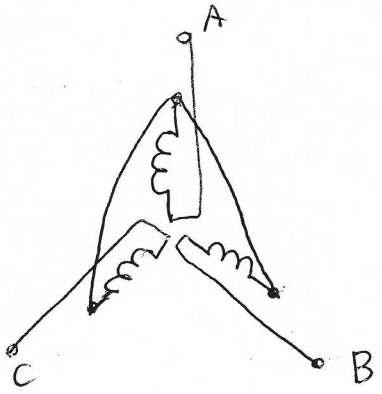
Circuits and systems, No 11

1. Construct the symmetrical components of phase voltages of 3-phase generators of the windings connected as below







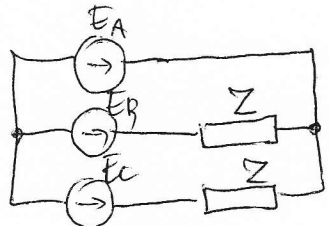
2. Calculate the symmetrical components of the line voltages

a) $|U_{AB}| = |U_{BC}| = 2000V$
$|U_{CA}| = 0$

b) $|U_{AB}| = 1000V$
$|U_{BC}| = 1000V$
$|U_{CA}| = 800V$

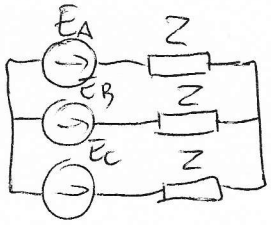
3. Calculate the symmetrical components of currents using Kirchhoff's laws for symmetrical components. Assume symmetrical generator of $|E_{ph}| = 200V$ (a).
$Z = 10 + j10$

a)



Symmetric generator

b)

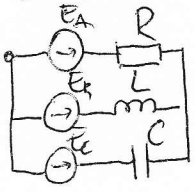


$|E_{ph}| = 300V$

Non-symmetric generator of the shuctie 1a.

4. Calculate symmetrical components of phase currents in the circuit
Generator is symmetric.

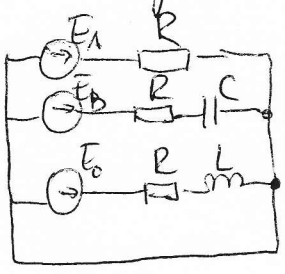
a)



$R = X_L = X_C = 10$

$|E_{ph}| = 200$

b)



$|E_{ph}| = 600V$
$R = 10\Omega$
$X_L = 10\Omega$
$X_C = 20\Omega$