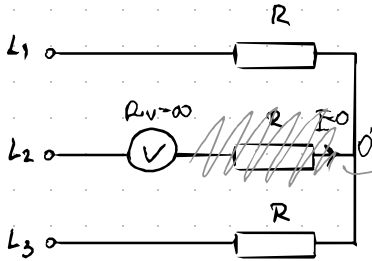


ZADACI S TROFAZNIM SKLOPOM

1. JES 18./19. 1.)



$$U_v = 346V$$

$$U_c = ?$$

- simetrične zvezje zveza

jer se struja kroz njegov 0 *

$$U_v = U_{\phi} \angle 120^\circ - U_{0'0}$$

$$U_{0'0} = \frac{\frac{U_{\phi} \angle 0^\circ}{R} - \frac{U_{\phi} \angle 240^\circ}{R}}{\frac{1}{R} + \frac{1}{R}}$$

$$U_{0'0} = \frac{U_{\phi} \angle 0^\circ + U_{\phi} \angle 240^\circ}{2}$$

$$U_{0'0} = \frac{U_{\phi}}{2} (1 \angle 0^\circ + 1 \angle 240^\circ)$$

$$U_{0'0} = \frac{U_{\phi}}{2} \cdot 1 \angle 60^\circ$$

$$\rightarrow U_v = U_{\phi} \angle 120^\circ - \frac{U_{\phi}}{2} \angle 60^\circ$$

$$U_v = U_{\phi} (1 \angle 120^\circ - \frac{1}{2} \angle 60^\circ)$$

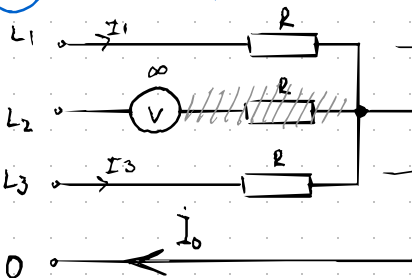
$$U_v = U_{\phi} \cdot \frac{3}{2} \angle 120^\circ$$

$$U_{\phi} = 230V$$

($\angle 120^\circ$) ovo ne trebamo

$$U_R = \sqrt{3} U_{\phi} = 400V$$

3. DEK 20./21 3.)



$$U_v = 346V$$

$$R = 10 \Omega$$

$$I_0 = ?$$

$$I_1 = \frac{U_{\phi} \angle 0^\circ}{R}$$

$$I_3 = \frac{U_{\phi} \angle 240^\circ}{R}$$

$$I_0 = I_1 + I_3$$

$$U_{0'0} = 0V$$

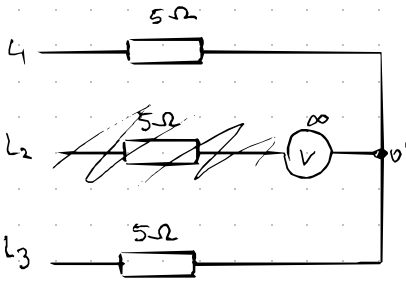
$$\rightarrow U_v = U_{\phi} - 0 \rightarrow U_v = U_{\phi} = 346V$$

$$I = I_1 + I_3 = \frac{U_{\phi} \angle 0^\circ}{R} + \frac{U_{\phi} \angle 240^\circ}{R}$$

$$I = \frac{U_{\phi}}{R} (1 \angle 0^\circ + 1 \angle 240^\circ)$$

$$I = 17.3 + 29.96j A$$

③ LW 19.20. 8.)



$$U_L = 220\text{V} \rightarrow U_f = 220\text{V}$$

$$U_V = ?$$

$$U_V = U_f \angle -120^\circ - U_{0,0}$$

$$U_{0,0} = \left(\frac{U_f \angle 0^\circ}{5\Omega} + \frac{U_f \angle -240^\circ}{5\Omega} \right) \cdot \frac{5\Omega}{2}$$

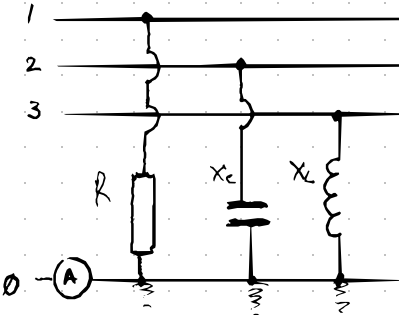
$$U_V = U_f \angle -120^\circ - 110 \angle 60^\circ$$

$$U_{0,0} = \frac{U_f}{2} (\angle 0^\circ + \angle -240^\circ)$$

$$U_V = 330 \angle -120^\circ$$

$$U_{0,0} = 110 \angle 60^\circ$$

④ 21.18.19. 8.)



$$I_N = 60.1\text{A}$$

$$R = X_L = X_C$$

$$I_A = \left(\frac{U_f \angle 0^\circ}{R} + \frac{U_f \angle -120^\circ}{-jR} + \frac{U_f \angle -240^\circ}{jR} \right)$$

$$I_A = \frac{U_f}{R} \left(1 \angle 0^\circ + 1 \frac{\angle -120^\circ}{-j} + 1 \frac{\angle -240^\circ}{j} \right) = 60.1\text{A}$$

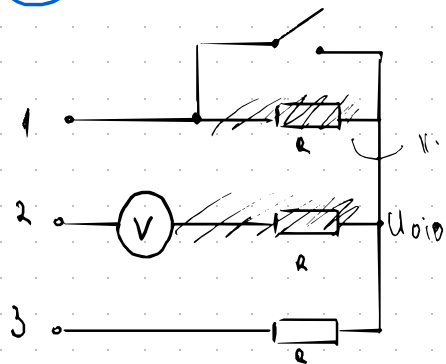
$$60.1 \frac{U_f}{R} (1 + \sqrt{3})$$

α kada zamijenimo

$$I_A = \frac{U_f}{R} \left(1 \angle 0^\circ + \frac{\angle -120^\circ}{j} + \frac{\angle -240^\circ}{-j} \right) = \frac{U_f}{R} (1 - \sqrt{3})$$

$$\frac{60.1}{(1 + \sqrt{3})} = \frac{I_A}{(1 - \sqrt{3})} \rightarrow I_A = 16.1\text{A}$$

5. Z1 20./21. 8.)



$$U_V = 100V$$

$$U_{o'0} = \frac{U_{\phi} \angle 0^\circ}{Z} + \frac{U_{\phi} \angle -240^\circ}{\frac{2}{Z}} = \underline{\underline{\frac{U_{\phi}}{2} \angle 60^\circ}}$$

$$U_V = U_{\phi} \angle -120^\circ - U_{\phi} / 2 \angle 60^\circ$$

$$100 = U_{\phi} (\angle -120^\circ - \frac{1}{2} \angle 60^\circ)$$

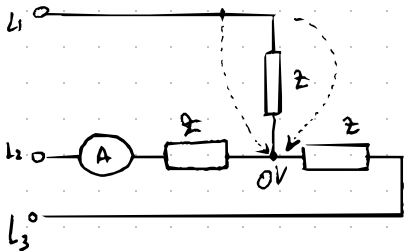
$$\underline{\underline{U_{\phi} = 66,66V}}$$

$$U_V = U_{\phi} \angle -120^\circ - U_{o'0} \rightarrow U_{\phi} \angle 0^\circ = U_{\phi}$$

jer je žica spojena na drugi napon

$$\underline{\underline{U_V = 115,5V}}$$

6. DOD 19./20. 11.) $I_{A1} = 2A$



$$I_{A2} = ? - \text{kratki spoj}$$

$$I_A = I_2 = \left| \frac{U_{\phi} \angle -120^\circ}{Z} \right| - \text{jer ampermetar na gleda kut}$$

$$2A = \frac{U_{\phi}}{Z}$$

2. slučaj - kratki spoj \rightarrow u sredini nije više 0V jer smo doveli $U_{\phi} \angle 0^\circ$

\hookrightarrow ampermetar mjeri struju koja prolazi kroz Z ali u razlici potencijala

$$I_{A2} = \frac{U_{\phi} \angle -120^\circ - U_{\phi} \angle 0^\circ}{Z} = \text{LINIJSKI NAPON} \rightarrow U_L = \sqrt{3} U_{\phi}$$

$$I_{A2} = \frac{\sqrt{3}}{2} U_{\phi} \rightarrow 2A \rightarrow I_{A2} = \sqrt{3} \cdot 2A$$

$$\underline{\underline{I_{A2} = 3,46A}}$$

