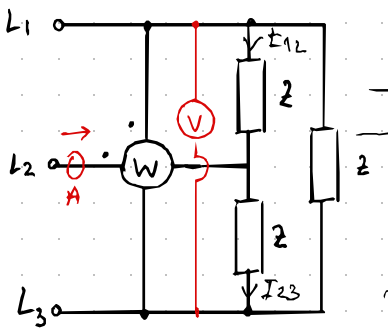
14. ZADACI S WATTMETROM

1) LVIR 18./19. 11.)

Wattmetar → mjeri radnu snagu



$U_L = 400V \rightarrow U_f = 230V$

$Z = 60\angle 45° \Omega$

→ spojeno u trokut

$U_V = U_f\angle 0° - U_f\angle -240°$

$U_V = 400\angle \varphi_V = 400\angle -30°$

$I_A = I_A\angle \varphi_A$

$I_A + I_{12} = I_{23}$

$I_A = I_{23} - I_{12}$

$P_W = |I_a| \cdot |U_V| \cdot \cos(\varphi_V - \varphi_A)$

$I_C = I_A = \frac{U_f\angle -120° - U_f\angle -240°}{Z}$

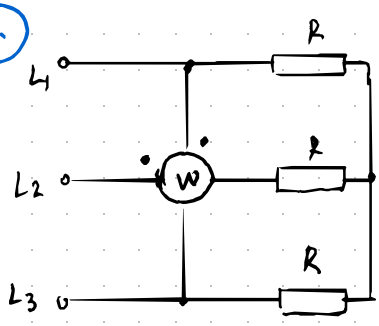
$= \frac{U_f\angle 0° - U_f\angle -120°}{Z}$

$I_A = 11{,}5\angle -165°\ A$

$11.5 \cdot 400 \cdot \cos(-30° + 165°)$

$\Rightarrow \boxed{P_W = -3252{,}69\ W}$

2.



$P_W = ?$ → $P_W = |I_2| \cdot |U_{13}| \cdot \cos(\varphi_A - \varphi_V)$

$U_L = 400V \rightarrow 230\ V$

$R = 10\ \Omega$

$I_2 = \frac{U_f\angle -120°}{10} = \frac{230\angle -120°}{10}$

$I_2 = 23\angle -120°$

$U_{13} = U_f\angle 0° - U_f\angle -240°$

$U_{13} = 398{,}37\angle -30°$

$P_W = 23 \cdot 398{,}37 \cdot \cos(-30 + 120)$ (90°, cos = 0)

$\boxed{P_W = 0\ W}$