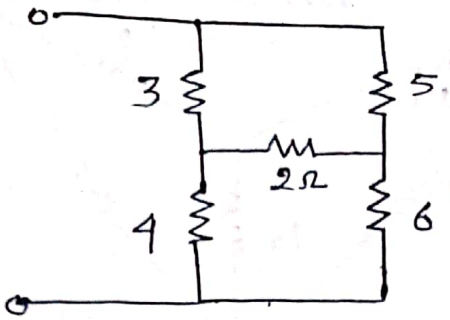
CONCEPT:-

Ro. (5)



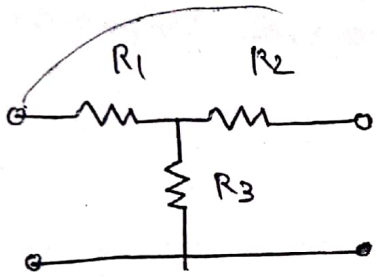
(1) Balanced condition also fails.

$\frac{5}{3} = 1.6$

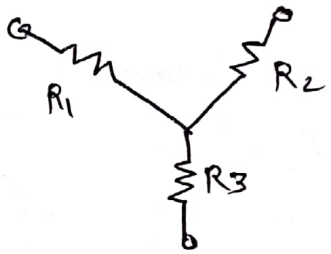
$\frac{6}{4} = 1.5$

(2) Neither || nor series connection is seen.

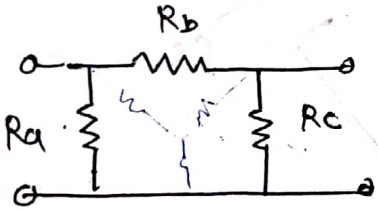
Note:- When element are connected neither in series nor in parallel to reduce the n/w. STAR-DELTA Transformation is used.



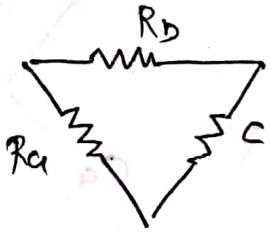
T



Y or ~~Delta~~ Star



π



Delta.

Delta to star:-

$R_1 = \frac{R_a R_b}{R_a + R_b + R_c}$

$R_2 = \frac{R_b R_c}{R_a + R_b + R_c}$

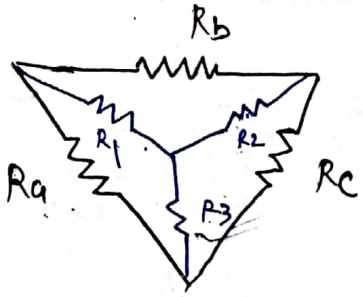
$R_3 = \frac{R_a R_c}{R_a + R_b + R_c}$

Star to Delta

$R_a = \frac{R_1R_2 + R_2R_3 + R_3R_1}{R_2}$

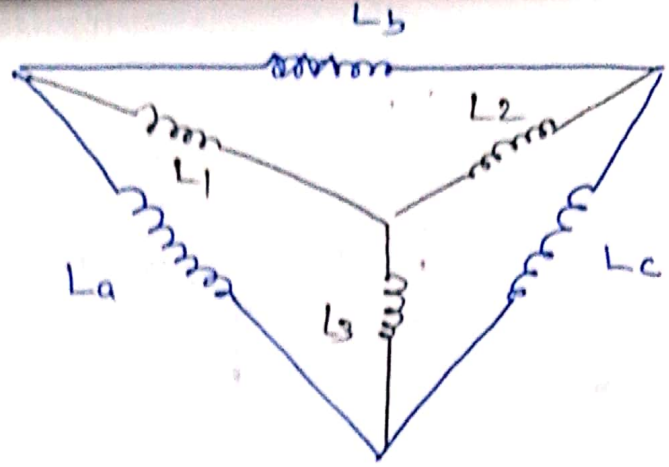
$R_b = \frac{R_1R_2 + R_2R_3 + R_3R_1}{R_3}$

$R_c = \frac{R_1R_2 + R_2R_3 + R_3R_1}{R_1}$



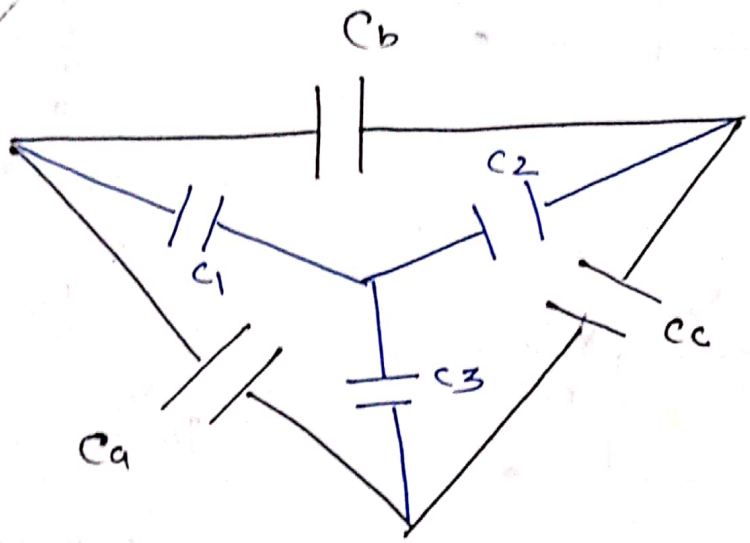
Scanned with CamScanner

(2)



Note:- The procedure of transformation from star to delta and delta to star. for the resistor, inductors, & impedance is same.

(3)



Delta to star! —

$$\frac{1}{C_1} = \frac{\frac{1}{C_a}\frac{1}{C_b}}{\frac{1}{C_a}+\frac{1}{C_b}+\frac{1}{C_c}}$$

$$\frac{1}{C_2} = \frac{\frac{1}{C_b}\frac{1}{C_c}}{\frac{1}{C_a}+\frac{1}{C_b}+\frac{1}{C_c}}$$

$$\frac{1}{C_3} = \frac{\frac{1}{C_a}\frac{1}{C_c}}{\frac{1}{C_a}+\frac{1}{C_b}+\frac{1}{C_c}}$$

Star to delta:

$$C_a = \frac{\frac{1}{C_1}\frac{1}{C_2}+\frac{1}{C_2C_3}+\frac{1}{C_3C_1}}{\frac{1}{C_2}}$$

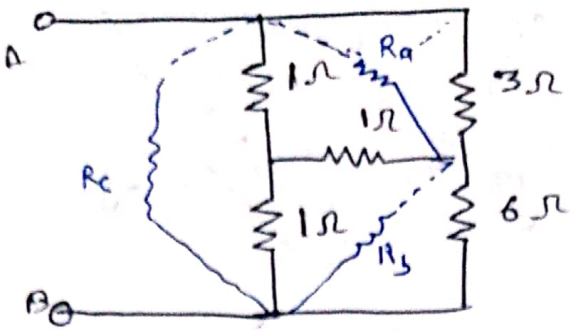
$$C_b = \frac{''}{\frac{1}{C_3}}$$

$$C_c = \frac{''}{\frac{1}{C_1}}$$

Scanned with CamScanner

Prob: ①

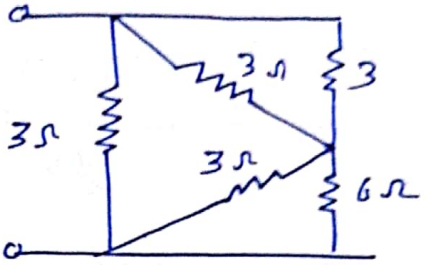
⇒ Find Req. b/w A & B

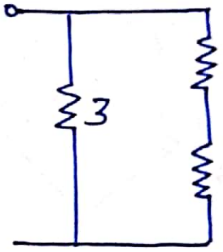


$R_a = \frac{3}{1} = 3\Omega$

$R_b = 3\Omega$

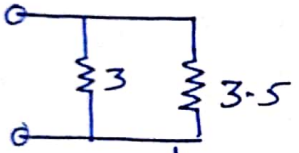
$R_c = 3\Omega$





$\frac{9}{6} = \frac{3}{2} = 1.5$

$\frac{18}{9} = 2$



$\frac{3 \times 3.5}{6.5} = \frac{3 \times 35}{65} = \frac{7 \times 3}{13} = \frac{21}{13} = 1.59\Omega$

Note :—

① When resistor of Equal value transformed from star to delta resistance ↑ by 3 times.

(Y ↔ Δ)

② When capacitor of equal value transformed from Star to Delta capacitance decreases by 3 times.

Scanned with CamScanner