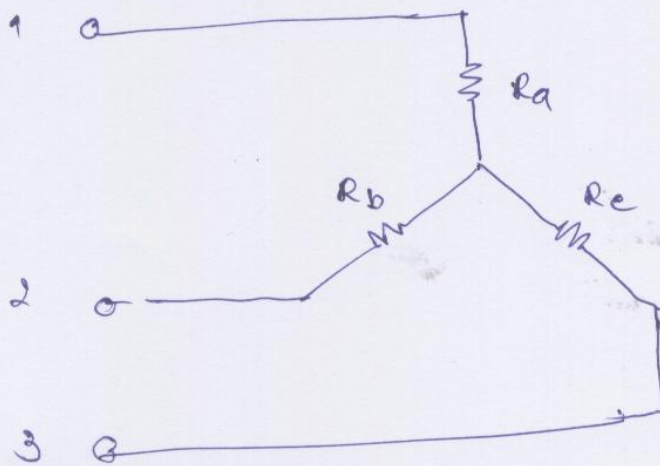


Diagram for Y and Δ , Δ into Y
1 case Y-connection

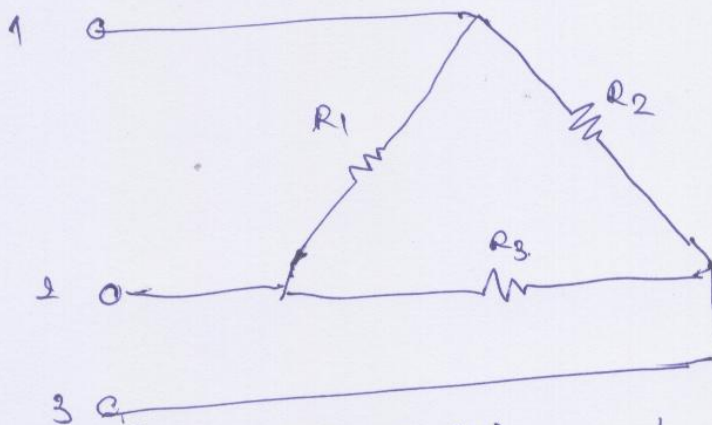


$$Z_{12} = R_a + R_b \quad (1)$$

$$Z_{23} = R_b + R_c \quad (2)$$

$$Z_{31} = R_a + R_c \quad (3)$$

2 case Δ -connection



$$Z_{12} = R_1 // (R_2 + R_3)$$

$$= \frac{R_1(R_2 + R_3)}{R_1 + R_2 + R_3}$$

$$Z_{12} = \frac{R_1 R_2 + R_3 R_1}{R_1 + R_2 + R_3} \quad (4)$$

$$Z_{23} = R_3 // (R_1 + R_2)$$

$$= \frac{R_3 R_1 + R_2 R_3}{R_1 + R_2 + R_3} \quad (5)$$

$$Z_{31} = R_2 // (R_1 + R_3)$$

$$= \frac{R_2 R_3 + R_1 R_2}{R_1 + R_2 + R_3} \quad (6)$$

matching (1) = (4), (2) = (5), (3) = (6)

$$R_a + R_b = \frac{R_1 R_2 + R_3 R_1}{R_1 + R_2 + R_3} \quad (7)$$

$$R_b + R_c = \frac{R_3 R_1 + R_2 R_3}{R_1 + R_2 + R_3} \quad (8)$$

$$R_c + R_a = \frac{R_2 R_3 + R_1 R_2}{R_1 + R_2 + R_3} \quad (9)$$

$$(7) + (8) + (9) : \quad R_a + R_b + R_c = \frac{R_1 R_2 + R_2 R_3 + R_3 R_1}{R_1 + R_2 + R_3} \quad (10)$$

$$(10) - (7) : \quad R_c = \frac{R_2 R_3}{R_1 + R_2 + R_3} \quad *$$

or $R_b, R_a = ?$