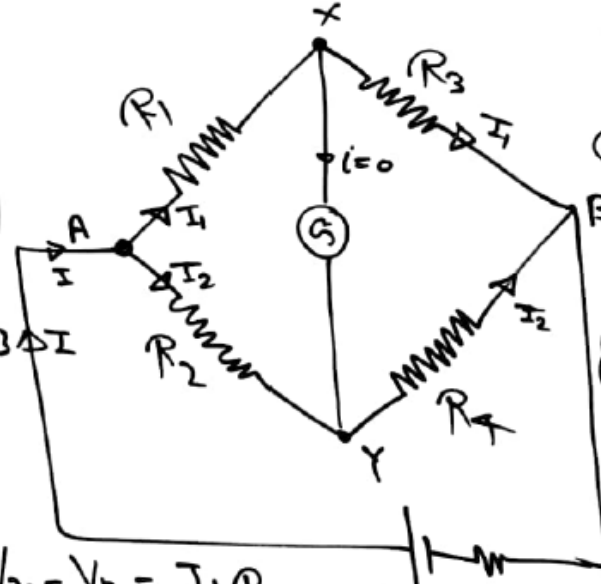
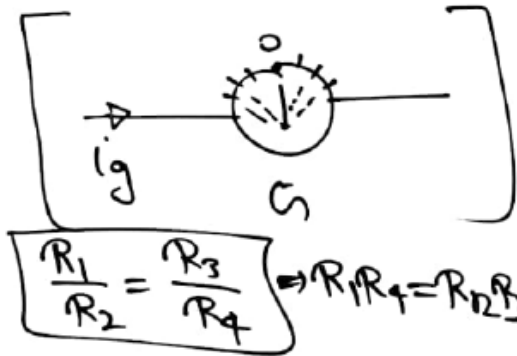


K lance wheat - Stone bridge:- [based on null deflection of galvanometer]

1 Using this find Value of Unknown Resistance.

⇒ Galvanometer:- [It is based on magnetic effect of current]



$$V_x = V_y$$

Condition for balance where Stone bridge

$$V_A - V_x = I_1 R_1$$

$$V_A - V_y = I_2 R_2$$

$$V_x = V_y$$

$$I_1 R_1 = I_2 R_2$$

$$\frac{I_1}{I_2} = \frac{R_2}{R_1} \quad \text{--- (1)}$$

$$V_x - V_B = I_1 R_3$$

$$V_y - V_B = I_2 R_4$$

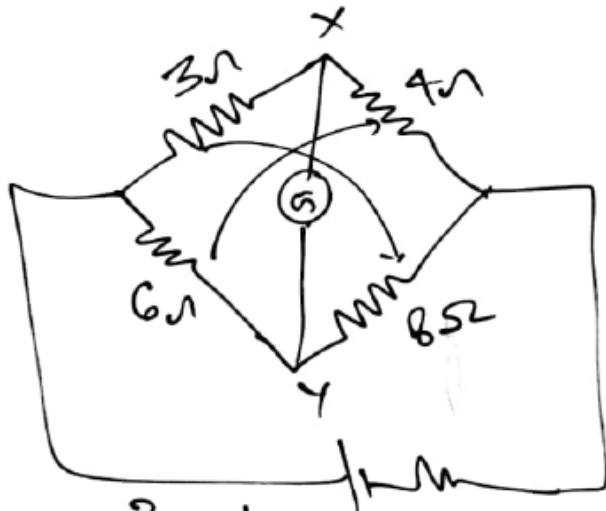
$$I_1 R_3 = I_2 R_4$$

$$\frac{I_1}{I_2} = \frac{R_4}{R_3} \quad \text{--- (2)}$$

$$\frac{R_2}{R_1} = \frac{R_4}{R_3}$$

Condition for balance where Stone bridge.

Wheatstone bridge - Stone bridge: [based on null deflection of galvanometer]



$$\frac{4}{8} = \frac{1}{2}$$

$$\frac{3}{6} = \frac{1}{2}$$

$$V_x - V_y = 0$$

$$3 \times 8 = 24$$

$$6 \times 4 = 24$$

$$4R = 15$$

$$R = 3.75$$



$$V_x = V_y$$

$$\frac{R_1}{R_2} = \frac{R_3}{R_4}$$

$$R_1 R_4 = R_2 R_3$$

Q) A balance W.S.B is given. Find value of R = unknown resistance.



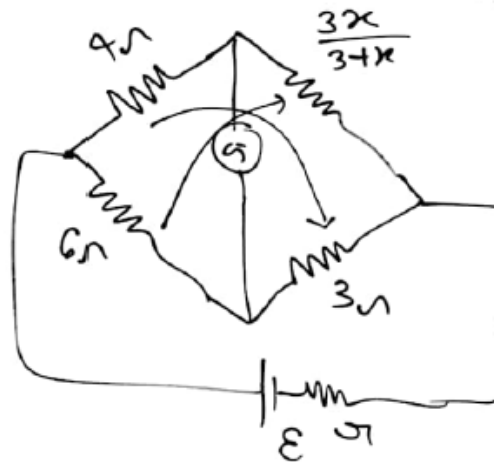
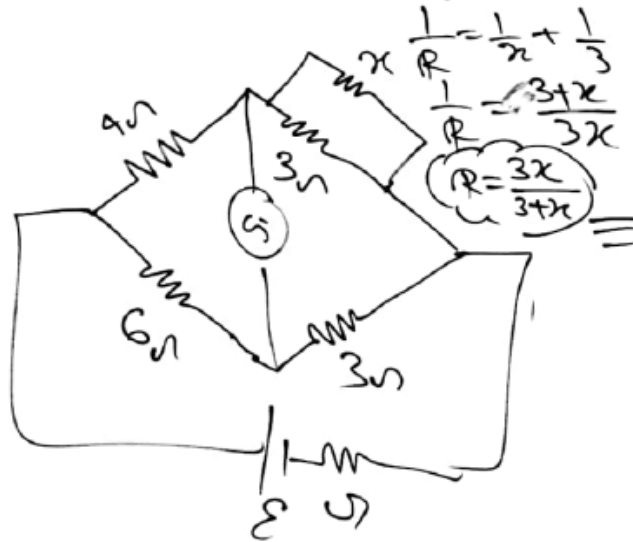
$$\frac{R}{5} = \frac{3}{4}$$

$$R = \frac{3 \times 5}{4} = \frac{15}{4} = 3.75 \Omega$$

1 Wheatstone bridge - Stone bridge - [based on null deflection of galvanometer]

Q1) A balance Wheatstone bridge is given.
Find value of x - resistance.

Q2) Find the value of x if a Null deflection in galvanometer



$$2 \frac{4}{6} = \frac{3x/3+x}{3}$$

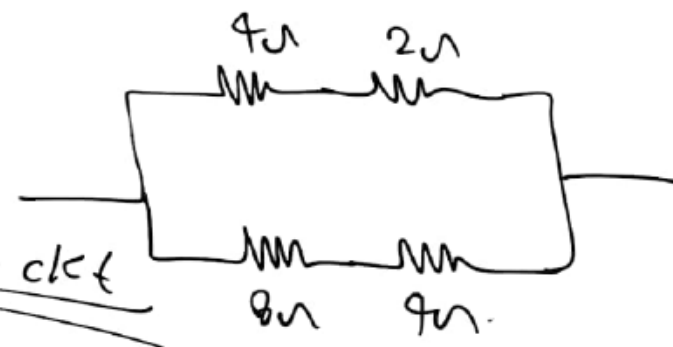
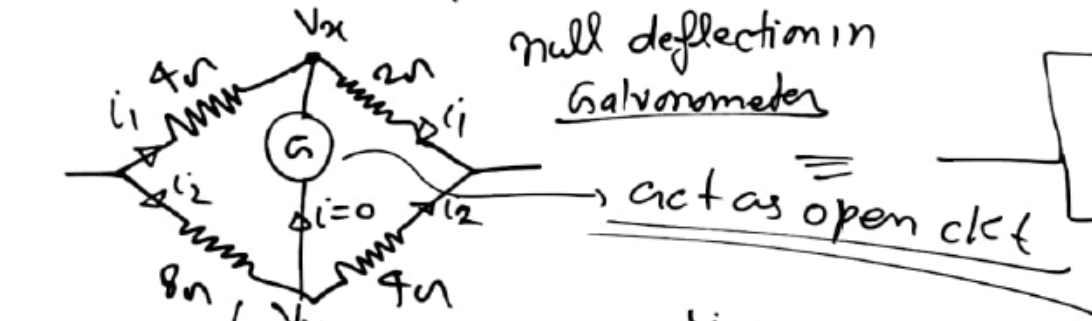
$$2 = \frac{3x}{3+x}$$

$$6 + 2x = 3x$$

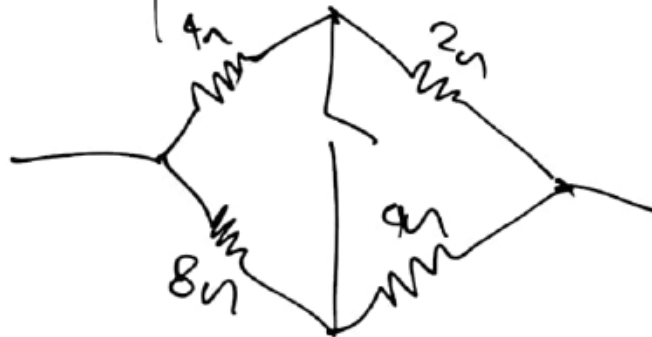
$$x = 6\Omega$$

Balance wheat - Stone bridge:-

⊕ Find Equivalent resistance

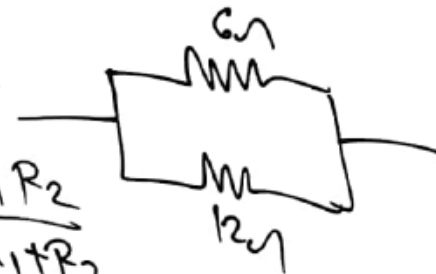


Check \rightarrow B W B [\checkmark ET]
 $V_x = V_y$

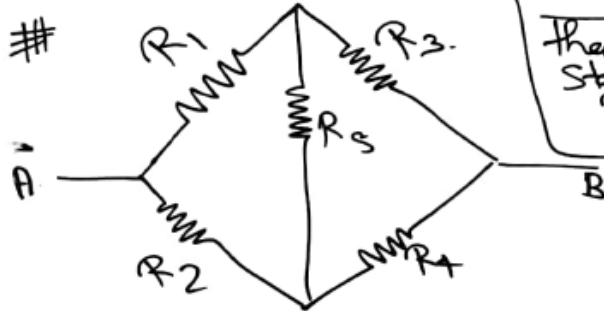


$$R_{eq} = \frac{R_1 R_2}{R_1 + R_2}$$

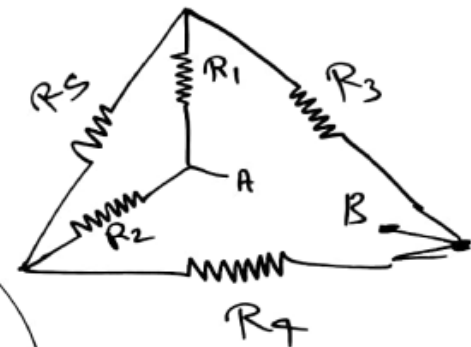
$$= \frac{6 \times 12}{18} = 4 \Omega$$



Balance wheat - Stone bridge:-



Current in R_5 is zero
 that's mean balance wheat
 Stone bridge is given
 $\frac{R_1}{R_2} = \frac{R_3}{R_4} \Rightarrow R_1 R_4 = R_2 R_3$



Y₀ find current in R_5
 (1) first we check.
 $\frac{R_1}{R_2} \neq \frac{R_3}{R_4}$ If $\frac{R_1}{R_2} = \frac{R_3}{R_4}$
 that's mean current in R_5 is zero, B.W.S.D

