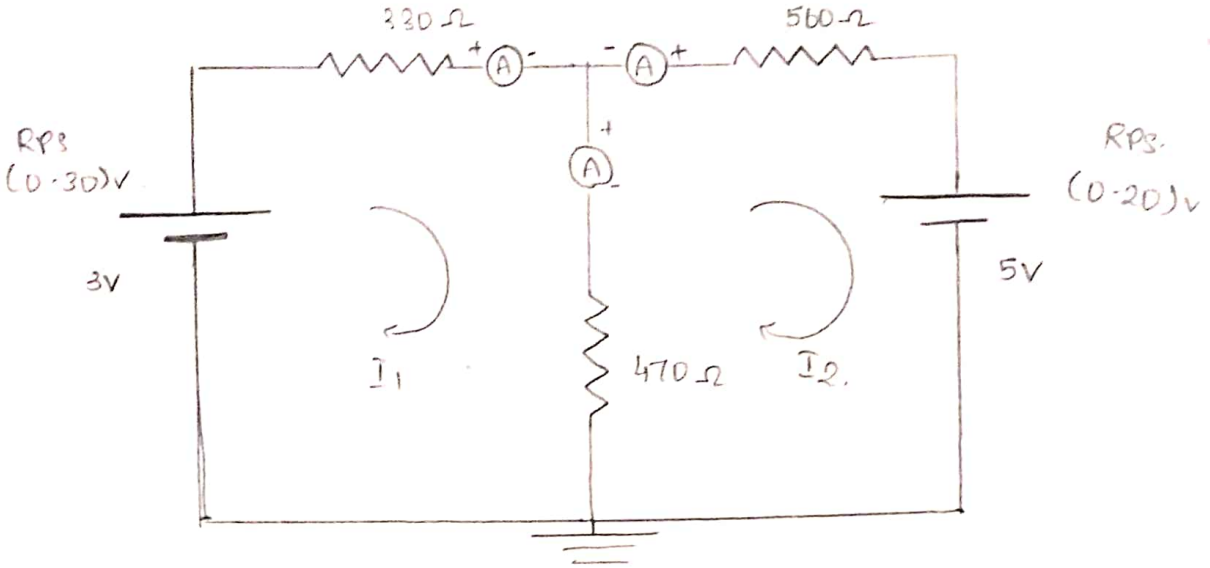
CIRCUIT DIAGRAM:-



TABULAR COLUMN:-

Parameters	Theoretical	Practical.
I_1	0.0090 A	0.089 A
I_2	0.0089 A	0.076 A
$I_1 - I_2$	0.00012 A	0.0012A.

Loop 1:

$$-3 + 330 I_1 + 470 (I_1 - I_2) = 0$$

$$800 I_1 - 470 I_2 = 3 \longrightarrow (1)$$

Loop 2:

$$-5 + 560 I_2 + 470 (I_2 - I_1) = 0$$

$$-470 I_1 + 1050 I_2 = 5 \longrightarrow (2)$$

DETERMINATION OF CURRENT IN CIRCUIT USING MESH ANALYSIS.

AIM:

To determine the current in circuit using mesh analysis both theoretically and practically for a given DC circuit.

APPARATUS REQUIRED:

S.No	APPARATUS	SPECIFICATION.	QUANTITY.
1.	Regulated Power supply (RPS)	(0-30V)	1
2.	Ammeter.	(0-10MA)MC	3
3.	Resistors	330Ω, 470Ω, 560Ω	each 1.
4.	Bread board	-	1

PROCEDURE:

1. Give connections as per the circuit diagram.
2. Switch on the supply, vary the RPS and set a particular input voltage.
3. Note down the readings of ammeters and voltmeters and tabulate them.
4. Vary the RPS for different input voltages and note down the readings of all the meters.
5. Reduce the RPS to its minimum value and switch off the supply.

$103 \times 1 \Rightarrow 82400I_1 - 48410I_2 = 309$

$-22090I_1 + 48410I_2 = 235$

$60310I_1 = 544$

$I_1 = \frac{544}{60310}$

$= 9.02 \times 10^{-3}$

Sub eq I_1 in equation ①,

$800[0.009] - 470I_2 = 3$

$7.2 - 470I_2 = 3$

$-470I_2 = 3 - 7.2$

$-470I_2 = -4.2$

$I_2 = \frac{4.2}{470} = 0.0089$

$I_2 = 8.97\,mA$

$I_1 - I_2 = 9.02 - 8.97$

$= 0.05\,mA.$

6. Using the tabulated values, verify Kirchoff's laws practically and verify it theoretically.

RESULT:

Thus the mesh analysis is verified practically and theoretically the resultant currents for 5V 3V supply are,

a) The current across 330Ω resistor is 0.0090

b) The current across 560Ω resistor is 0.0089.

c) The current across 470Ω resistor is 0.00012.