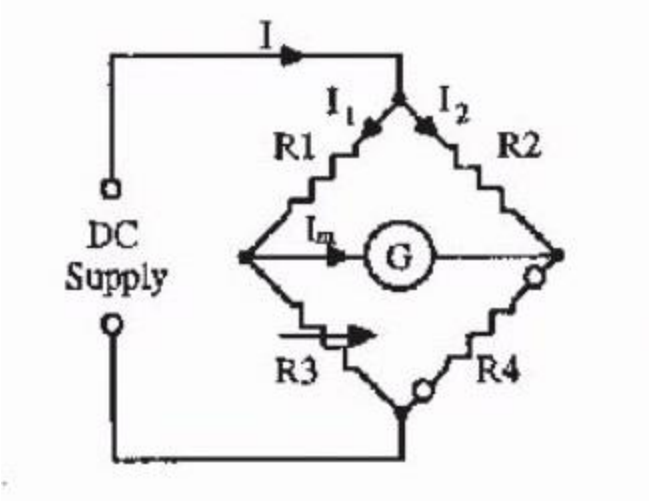
TITLE: - WHEATSTONE BRIDGE

EQUIPMENTS:-

1. DYNA-1750
2. Connecting Leads
3. Power Supply
4. Multimeter

THEORY:

Wheatstone bridge is used for measurement of unknown resistance. The circuit arrangement of the Wheatstone bridge is as shown below.



At balanced condition
$R_1R_x=R_2R_3$
$R_x=(R_2/R_1)*R_3$
Where,
$R_2/R1$=ratio arms
R_3=standard resistance

Knowing value of R_1, R2, R3 we can conclude unknown resistance.

Observations:-
Dial reading =655
Resistance (R_3) =10*dial reading =6.55 kΩ
Resistance (R_1) =1000-R_3=3.45kΩ
Resistance (R_2) =12kΩ

So, Unknown resistance (R_x) = (R_2/R_1)*R_x
= (12/3.45)*6.55
=22.78KΩ

RESULT:-

Thus by using Wheatstone bridge when it's set to IN position for unknown resistance, we obtained the value of unknown resistance =22.78kΩ
2 When set to out

For the position of the unknown resistance set to OUT position, the external resistance is connected between arms B and C. The external resistance is chosen by potentiometer linear displacement of point B .we observe the resistance for all 10 points of potentiometer by setting Wheatstone bridge to well deflection state.

OBSERVATION TABLE

10KΩ Resister Setting	Dial reading	R_3(10*dial)Ω	R_1(10k-R_3)KΩ	$R_4=(R_2/R_1)*R_3$kΩ
1.	194	1940	8.060	2.88
2.	100	1000	9.00	1.33
3.	097	0970	9.03	1.28
4.	095	0950	9.05	1.25
5.	093	0930	9.07	1.23
6.	091	0910	9.09	1.20
7.	090	0900	9.10	1.186
8.	089	0890	9.11	1.17
9.	088	0880	9.12	1.157

CONCLUSION:

In this way by using Wheatstone bridge arrangement and setting it at out position of unknown resistance. Hence by connecting unknown resistance terminal of potentiometer. We have measured the value of resistance of potentiometer at 10 different position. Thus Wheatstone bridge is used for knowing value of unknown resistance.