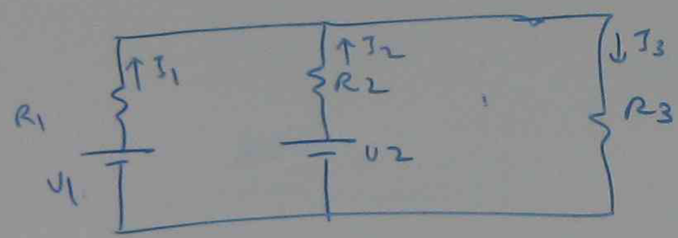
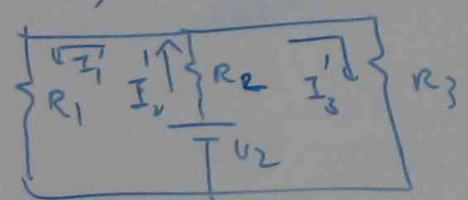
SUPER POSITION THEOREM

THE CURRENTS FLOWS IN A CIRCUIT CAN BE DETERMINED BY KILLING THE SOURCES ALTERNATIVELY AND VECTORIALLY ADDING THE CURRENTS.



KILL V1, FIND I_1, I_2, I_3

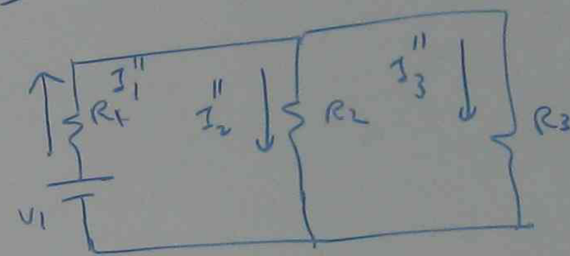


$$I_2' = \frac{V_2}{\frac{R_1 \times R_3}{R_1 + R_3} + R_2}$$

$$I_1' = I_2' \times \frac{R_3}{R_1 + R_3}$$

$$I_3' = I_2' \times \frac{R_1}{R_1 + R_3}$$

KILL V2 FIND I_1, I_2, I_3



$$I_1'' = \frac{V_1}{R_1 + \frac{R_2 \times R_3}{R_2 + R_3}}$$

$$I_2'' = I_1'' \times \frac{R_3}{R_2 + R_3}$$

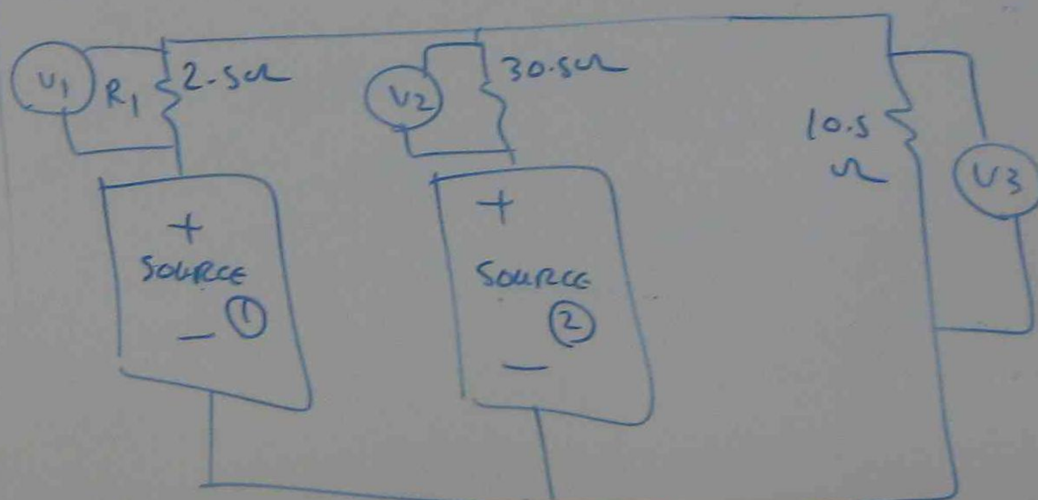
$$I_3'' = I_1'' \times \frac{R_2}{R_2 + R_3}$$

$$I_1 = I_1' + I_1'' = I_2' \times \frac{R_3}{R_1+R_3} \downarrow - \frac{V_1}{R_1 + \frac{R_2 R_3}{R_2+R_3}} \uparrow$$

$$I_2 = I_2' + I_2'' = \frac{V_2}{\frac{R_1 \times R_3}{R_1+R_3} + R_2} \uparrow - I_1'' \times \frac{R_3}{R_2+R_3} \downarrow$$

$$I_3 = I_3' + I_3'' = I_2' \times \frac{R_1}{R_1+R_3} \downarrow + I_1'' \frac{R_2}{R_2+R_3} \downarrow$$

PRACTICAL (i) CONNECT THE GIVEN CIRCUIT



SWITCH ON SOURCE 1, TAKE V_1, V_2, V_3

V_1	$I_1' = \frac{V_1}{R_1}$	V_2	$I_2' = \frac{V_2}{R_2}$	V_3	$I_3' = \frac{V_3}{R_3}$

SWITCH OFF SOURCE 1, SWITCH ON SOURCE 2, TAKE V_1, V_2, V_3

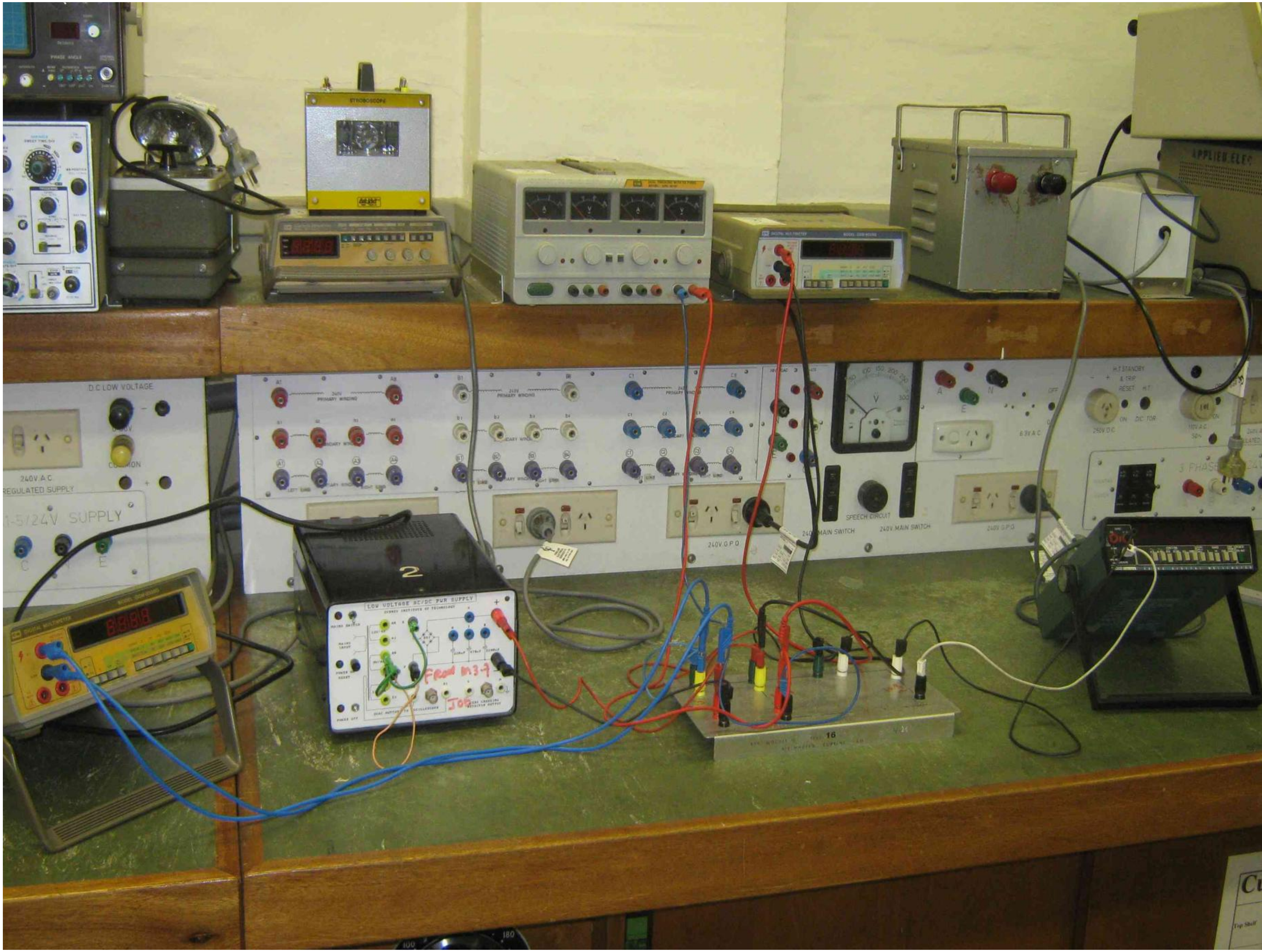
V_1	$I_1'' = \frac{V_1}{R_1}$	V_2	$I_2'' = \frac{V_2}{R_2}$	V_3	$I_3'' = \frac{V_3}{R_3}$

THEN ADD I_1' & I_1'', I_2' & I_2'', I_3' & I_3''

$I_1 = I_1' + I_1'' =$ | $I_2 = I_2' + I_2'' =$ | $I_3 = I_3' + I_3'' =$

SWITCH ON BOTH SOURCE 1 & 2 TAKE V_1, V_2, V_3

V_1	$I_1 = \frac{V_1}{R_1}$	V_2	$I_2 = \frac{V_2}{R_2}$	V_3	$I_3 = \frac{V_3}{R_3}$


D.C LOW VOLTAGE
COMMON
240V A.C
REGULATED SUPPLY
STROBOSCOPE
PRIMARY WINDING
2
LOW VOLTAGE AC/DC PWR SUPPLY
FROM M3-7
JOB
SPEECH CIRCUIT
240V MAIN SWITCH
240V G.P.O
H.T STANDBY
3 PHASE
16