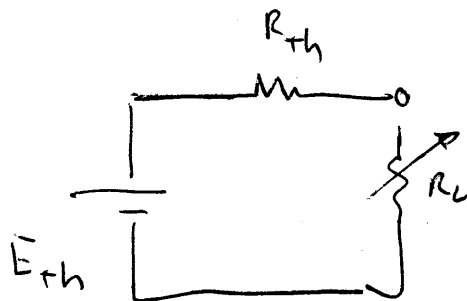


2012/4/9

(1)

Q-5
Max power transfer.

P-365



When $R_L = R_{th}$
Max Power Move to R_L

$$\eta = \frac{P_{out}}{P_{in}} \times 100 = \frac{50\%}{50\%} \times 100\% = 100\%$$

R_{th} ease 50% of power

$$\Rightarrow I^2 R_{th} \text{ Heat}$$

Matched

OK

Audio

$8\Omega : 8\Omega$ / 1/4 watt



Speaker / Audio output

frequency range

~ 4 kHz

OPT

output Transformer

8Ω

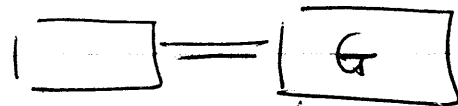
coil + resistance

(2)

AEP / I&M

Generate Electricity

Coal } $\Rightarrow$ Heat up water - Steam $\rightarrow$
 Gas }

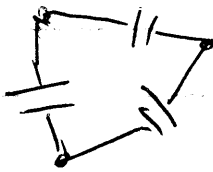
Turbine 


3φ

357 KV

Steel Dynamics

\$ 7 million / month.



Δ

50%

P.F. 85 UP

85% ~

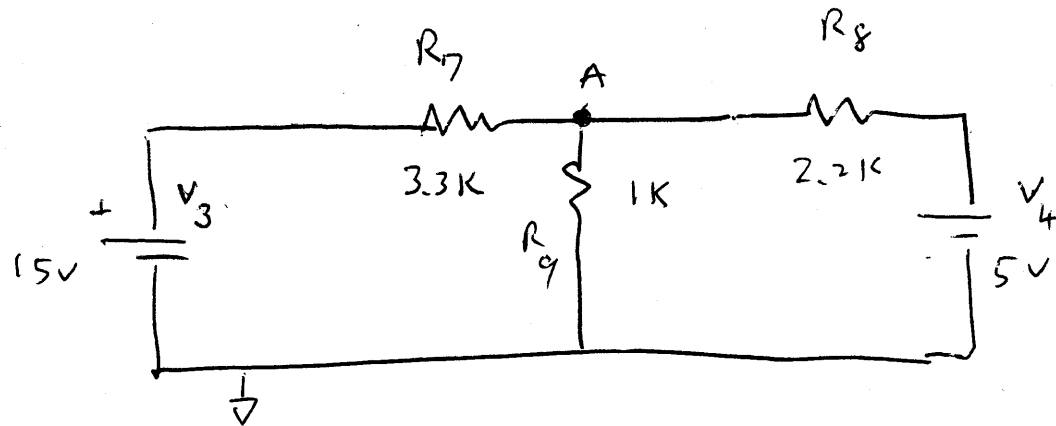
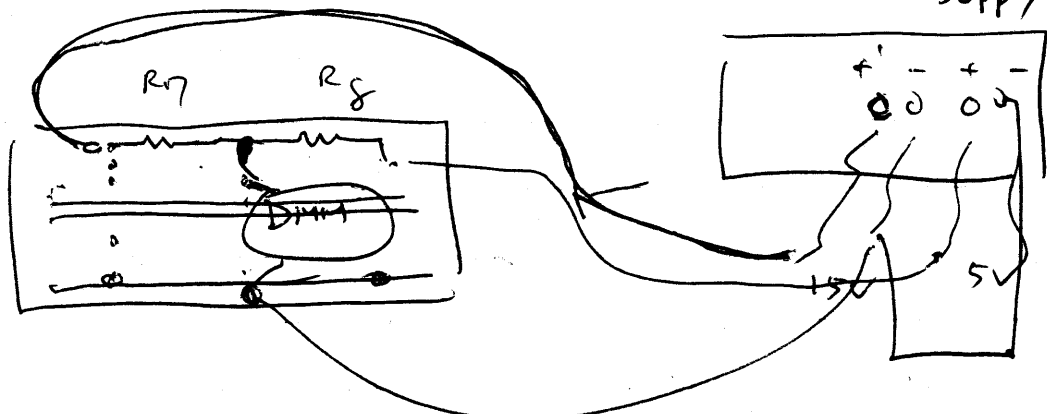
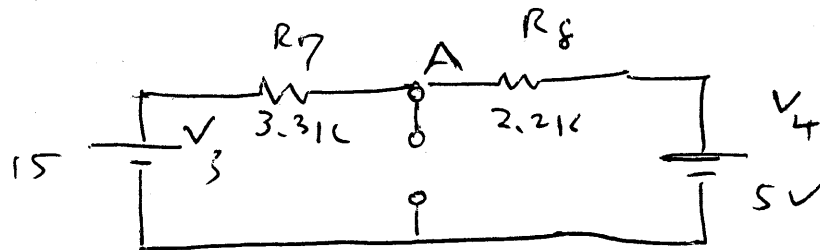
 $\cos \theta$

$$P_{out} = \sqrt{3} E_L \cdot I_L \cdot \cos \theta$$

power Factor

$$P = E \cdot I \cdot \cos \theta$$

LAB 12

 $R_L = R_9$ Load Resistor $\bar{E}_{th}$ Measurement

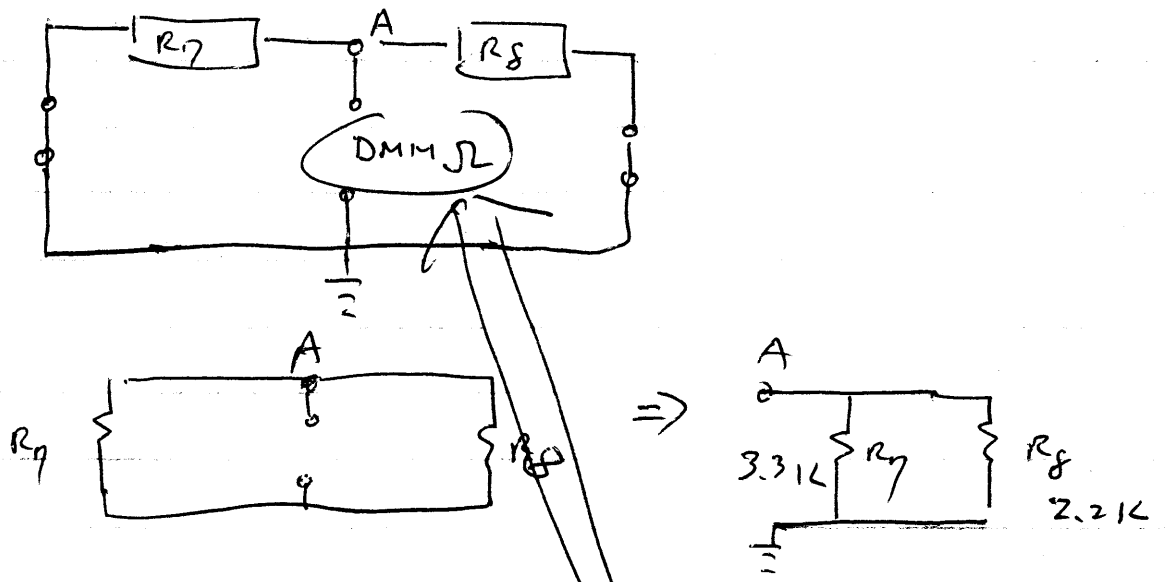
$$V_A = \bar{E}_{th} = V_{th} \quad (\text{DMM reading})$$

$$\text{If } \boxed{10.25\text{V}} \Rightarrow 10.3\text{V}$$

(2) R_{th} Measurement

2a (Remove V_3, V_4 ; Disconnect V_4, V_3)

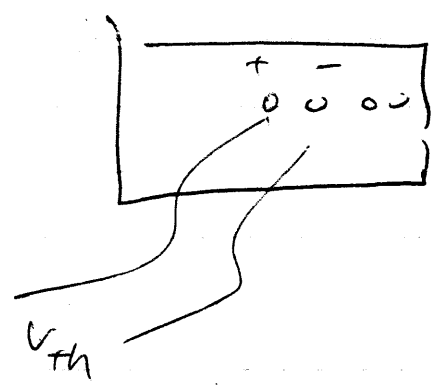
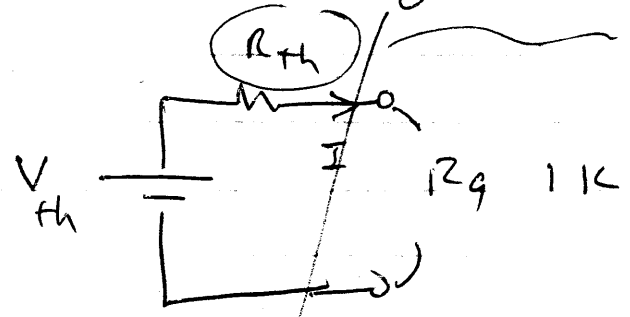
2b Replace it with a wire



$$R_{th} = R_{7,8} = \frac{3.3k * 2.2k}{5.5k} = 1.32 k\Omega$$

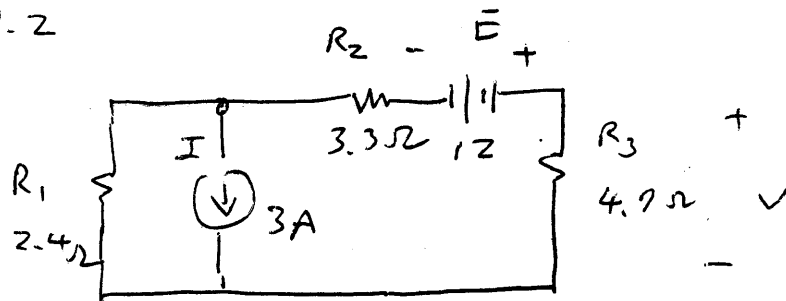
R_{th} - calculation
 $R_7 || R_8$

3) Construct Equivalent circuit

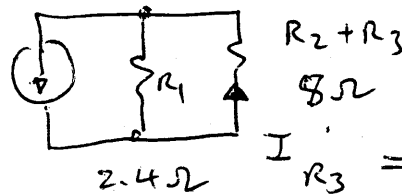
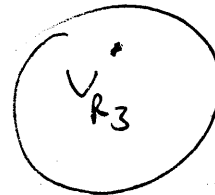
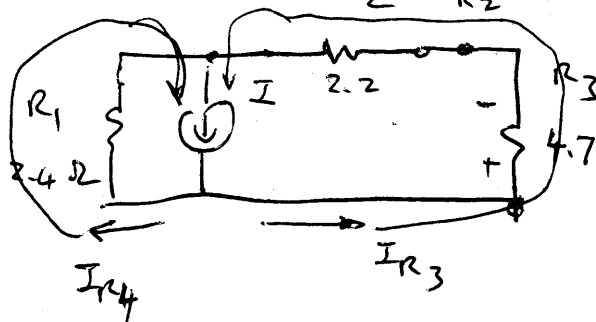


(5)

Q 9.2

Super position $\Rightarrow V_{R3}$

(1)

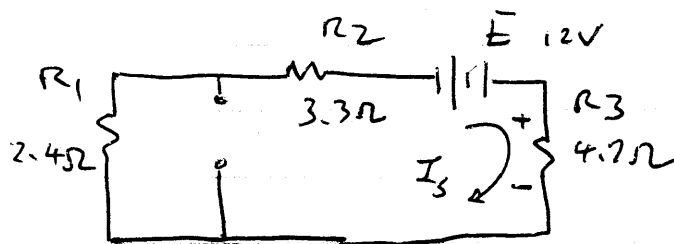
 $I = 3A$ work alone E short ckt

$$I_{R3} = I \cdot \frac{R_1}{R_1 + (R_2 + R_3)}$$

$$= 3 \cdot \frac{2.4}{2.4 + 8}$$

$$V_{R3} = (I_{R3} \cdot 4.7)$$

(2)

 E work alone I open ckt

$$R_T = R_2 + R_3 + R_1$$

$$= 10.4\Omega$$

$$I_S = \frac{E}{R_T} = \frac{12V}{10.4\Omega}$$

$$= 1.15 \text{ Amp}$$

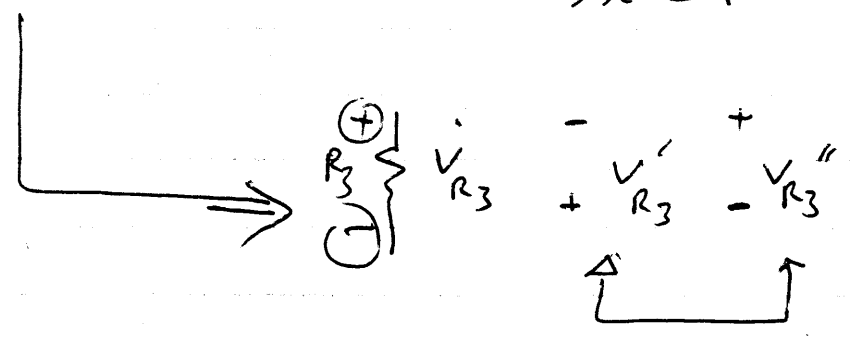
$$V_{R3} = I_S \cdot R_3 = 1.15 \cdot 4.7$$

$$= \underline{\underline{5.42V}}$$

(3) Step 3

$$V_{R3} = V_{R3}' + V_{R3}''$$

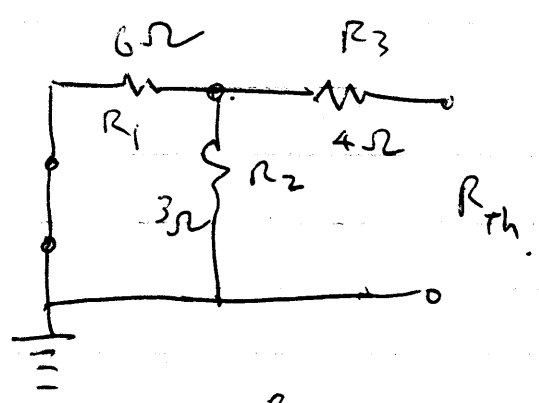
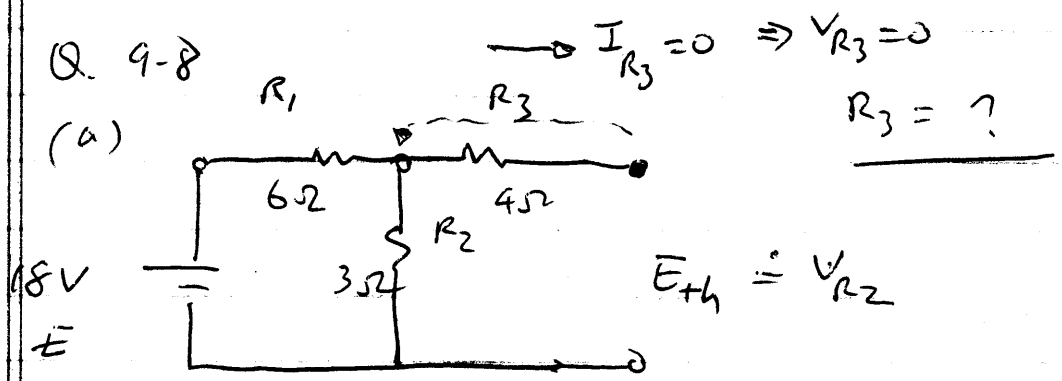
(Note)
Observe polarity



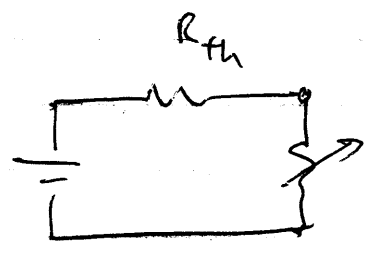
$$V_{R3}'' > V_{R3}'$$

Q. 9-8

(a)



(b)



$$R = 2$$

$$R = 30\Omega$$

$$I_R$$

$$I_R = \underline{\hspace{2cm}}$$