Student Name: Gurpreet Singh

TEJ4M0 Electronics Review

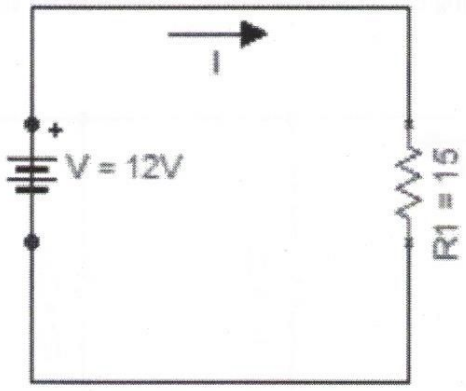
1. According to Kirchoff's Current Law, the total current entering a junction must equal the total current **leaving** the junction.
2. Kirchhoff's Voltage Law is used in **parallel** circuits.
3. Kirchoff's Current Law is used in **parallel** circuits.
4. Since series circuits contain only one current path, therefore the current is the **same** everywhere.
5. Since parallel circuits contain more than one current path, therefore the total current is the sum of the individual currents.
6. Transistors are used to **amplify** weak signals and also as **switches** to disconnect other components.
7. Transistors have three connection points. These include the **collector**, **base**, and the **emitter.**

8. A 12 volt battery supplies power to a soldering iron with a resistance of 15 ohms. Using Ohm's Law, calculate how much current is being drawn by the soldering iron? Show your calculations.

$I = \frac{V}{R}$

$= \frac{12}{15}$

$= 0.8\ A$



Student Name: GURPREET

9. Using Ohm's Law and Kirchoff's voltage law, calculate the current flowing through each resistor and the total current flowing through the circuit below (R1 = 100Ω, R2 = 220Ω, R3 = 470Ω). Show your calculations. All current values should be provided in milliamps.

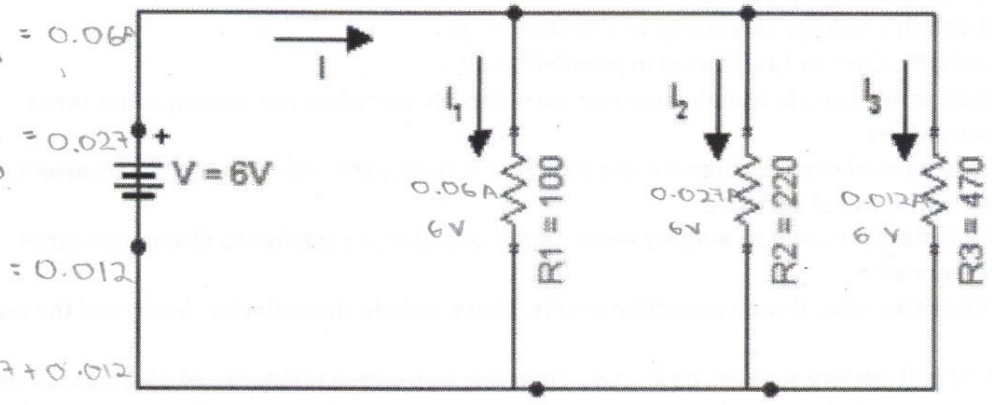
$I_1 = \frac{V}{R_1} = \frac{6}{100} = 0.06$

$I_2 = \frac{V}{R_2} = \frac{6}{220} = 0.027$

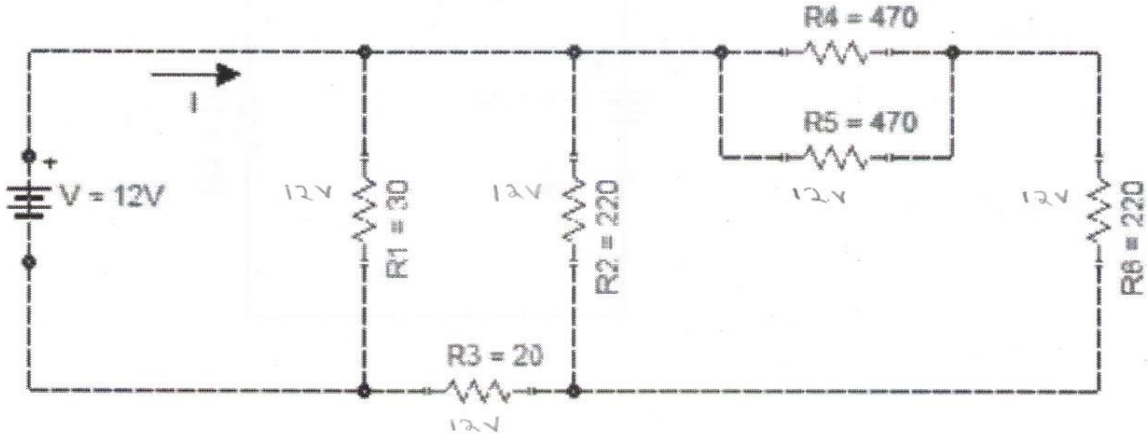
$I_3 = \frac{V}{R_3} = \frac{6}{470} = 0.012$

$I_T = 0.06 + 0.027 + 0.012$

$= 0.10$ or 10 mA



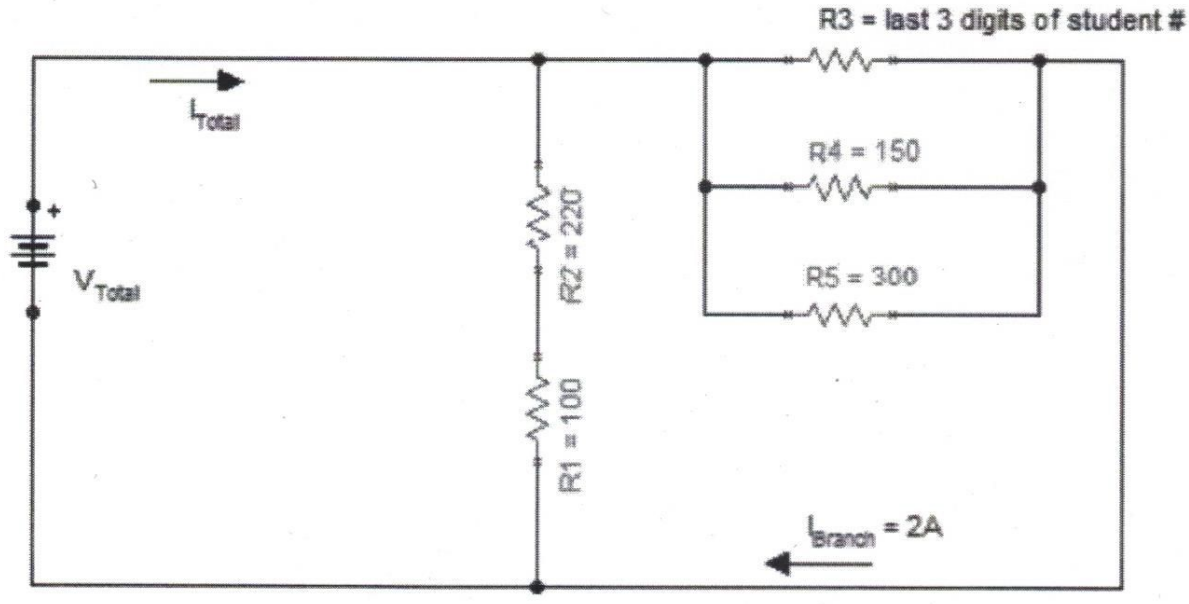
10. Simplify the following circuit and determine the value for total circuit current (I). Show calculations.



11. For the circuit below, calculate all of the values below. Show all calculations.

R_T = 50Ω	I_T = 2.31A	P_T = 231W
I_{R1} = 0.3125A	V_{R1} = 31.25V	P_{R1} = 9.76W
I_{R2} = 0.3125A	V_{R2} = 68.75V	P_{R2} = 21.48W
I_{R3} = 1A	V_{R3} = 100V	P_{R3} = 100W
I_{R4} = 0.66A	V_{R4} = 100V	P_{R4} = 66W
I_{R5} = 0.33A	V_{R5} = 100V	P_{R5} = 33W

Student Name: _____



Summary

$V_1 = I_1 R_{1,2}$
$= (0.3125)(100)$
$= 31.25$

$V_2 = I_2 R_{1,2}$
$= (220)(0.3125)$
$= 68.75\ V$

$V_3 = 100\ V$

$V_4 = 100V$

$V_5 = 100V$

$I_1 = \frac{V_1}{R_1}$
$= \frac{31.25}{100}$
$= 0.3125$

$I_2 = \frac{V_2}{R_2}$
$= \frac{68.75}{220}$
$= 0.3125\ A$

$I_3 = \frac{V_3}{R_3}$
$= \frac{100}{100}$
$= 1\ A$

$I_4 = \frac{V_4}{R_4}$
$= \frac{100}{150}$
$= 0.66\ A$

$I_5 = \frac{V_5}{R_5}$
$= \frac{100}{300}$
$= 0.33A$

$P_1 = V_1 I_1$
$= (31.25)(0.3125)$
$= 9.76\ W$

$P_2 = V_2 I_2$
$= (68.75)(0.3125)$
$= 21.48\ W$

$P_3 = V_3 I_3$
$= (100)(1)$
$= 100\ W$

$P_4 = V_4 I_4$
$= (100)(0.66)$
$= 66\ W$

$P_5 = V_5 I_5$
$= (100)(0.33)$
$= 33W$

TEJ 4 M0 Electronics Review

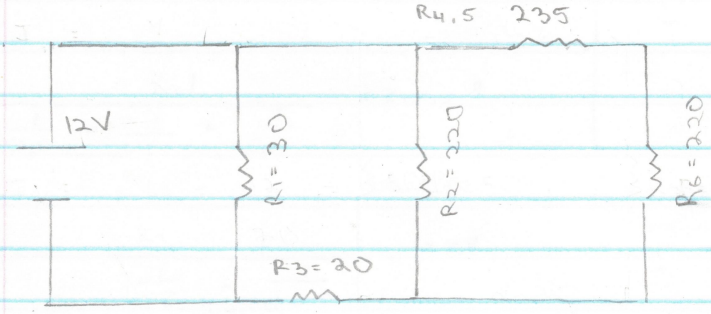
9) $I_1 = \frac{V}{R_1} = \frac{6}{100} = 0.06A$

$I_2 = \frac{V}{R_2} = \frac{6}{220} = 0.027A$

$I_3 = \frac{V}{R_3} = \frac{6}{470} = 0.012A$

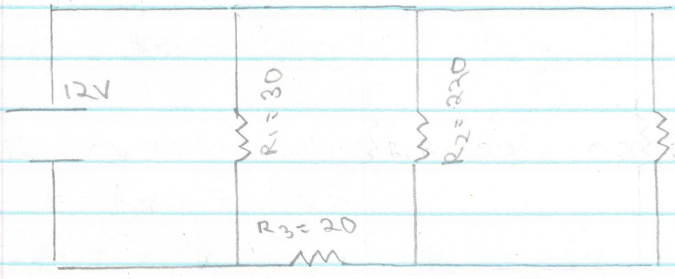
$I_T = 0.06 + 0.027 + 0.012 = 100\ mA$

10)



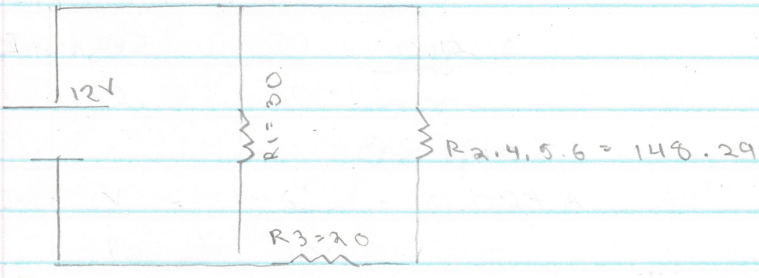
$R_{4,5} = \frac{(470)(470)}{470+470}$

$= 235\ \Omega$



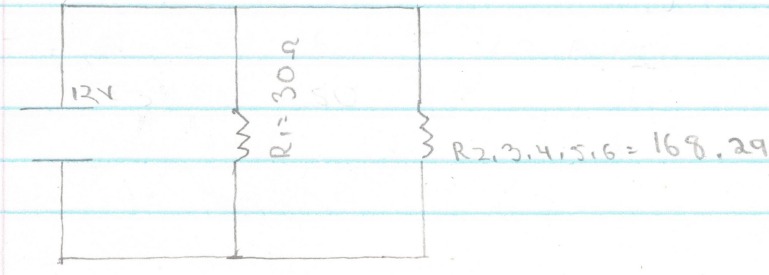
$R_{4,5,6} = 235 + 2$

$= 455\ \Omega$



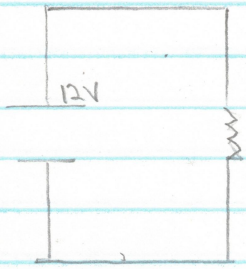
$R_{2,4,56} = \frac{(455)(22}{455+22}$

$= 148.29\ \Omega$



$R_{2,3,4,5,6} = 148.2$

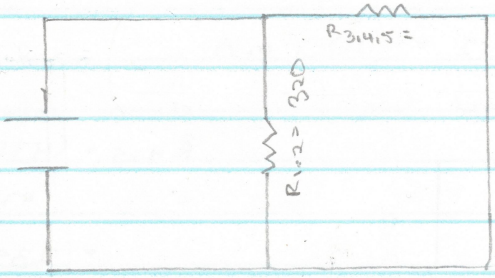
$= 168.$



$$R_{1,2,3,4,5,6} = \frac{(168.29)(30)}{168.29 + 30} = 25.46$$

$$I_T = \frac{V_T}{I_T} = \frac{12\ V}{25.46} = 0.47 \text{ or } 470\ mA$$

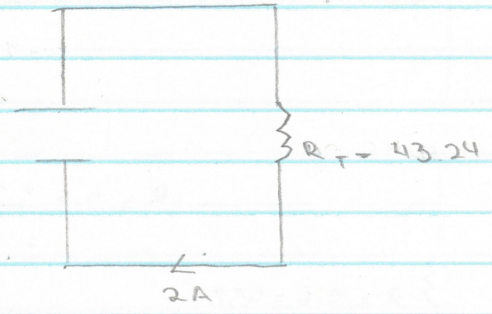
11)



$$R_{1,2} = 220 + 100 = 320\ \Omega$$

$$R_{3,4,5} = \frac{1}{\frac{1}{100} + \frac{1}{150} + \frac{1}{300}} = 50$$

$$R_T = \frac{1}{\frac{1}{320} + \frac{1}{50}} = 43.24$$



$$V_T = (2) \cdot (R_{1,2,3}) = (2)(50) = 100\ V$$

$$I_{1,2} = \frac{V_t}{R_{1,2}} = \frac{100}{320} = 0.3125$$

$$V_1 = I_1 R_{1,2} = (0.3125)(100) = 31.25\ V$$

$$V_2 = I_2 R_{1,2} = (220)(0.3125) = 68.75\ V$$