Department of ECE, Bennett University

EECE105L: Fundamentals of Electrical and Electronics Engineering

Tutorial Sheet-3

1. For the circuits shown in fig. 1 through 4, find the equivalent resistance R_T between nodes A and B. If the value for any resistor is not provided, assume 1 kΩ resistance.

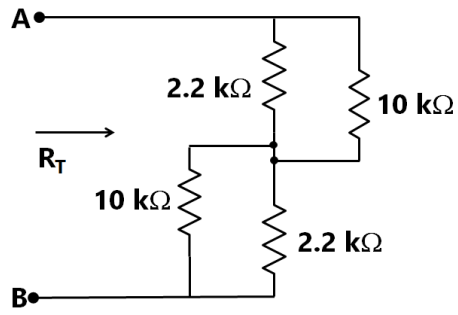

Fig. 1

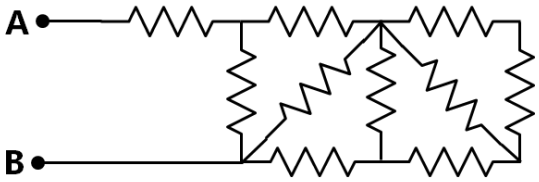

Fig. 2

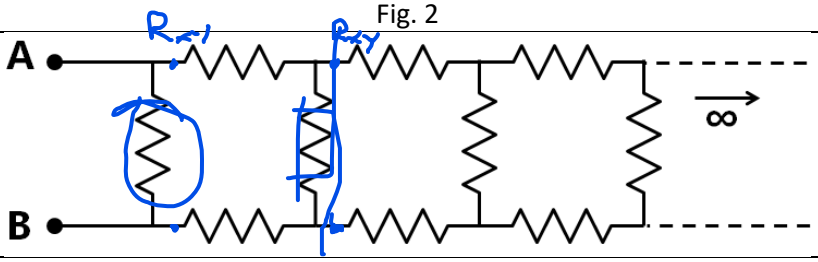

Fig. 3

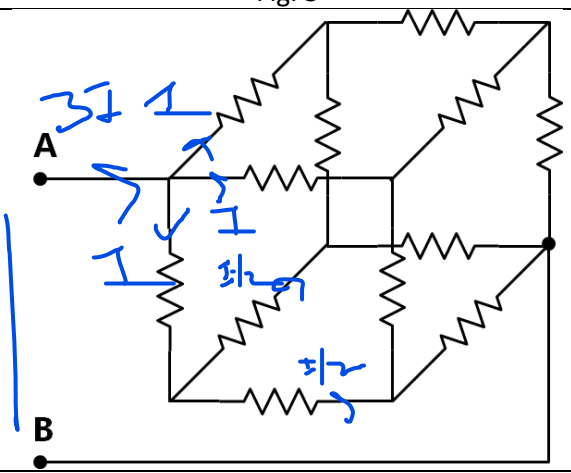

Fig. 4

2. For the circuit shown in fig. 5 through 8, find the equivalent resistance between nodes A and B. Then evaluate current through each resistor and voltage drop across each resistor.

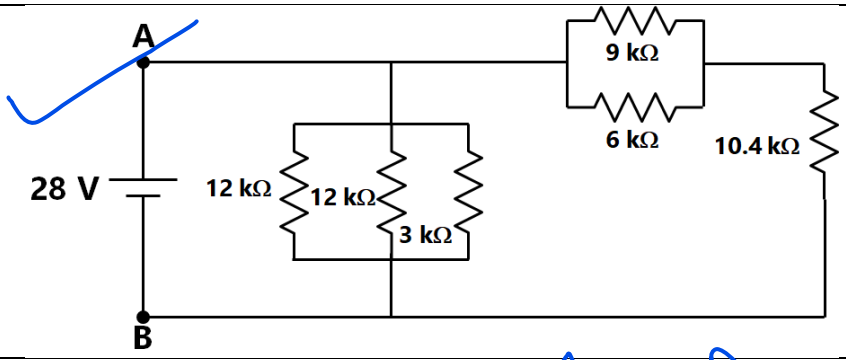

Fig. 5

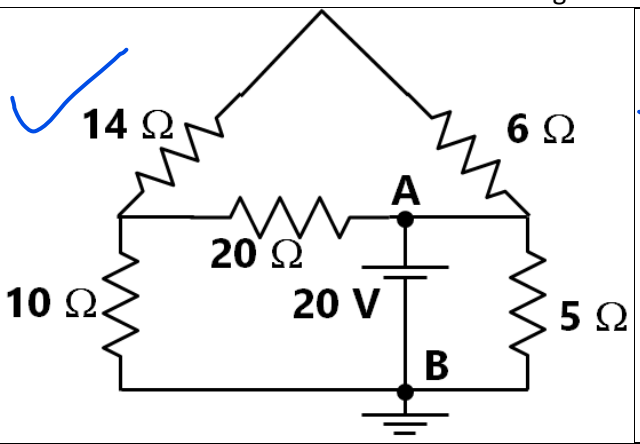

Fig. 6

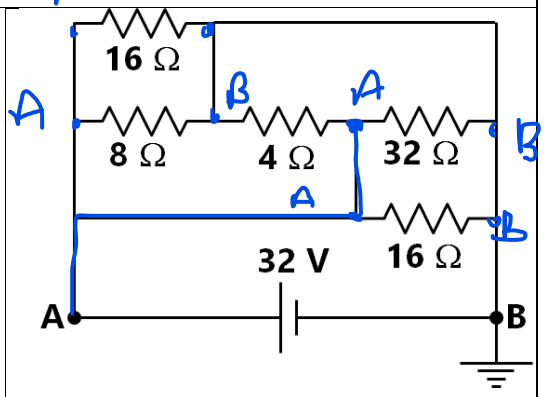

Fig. 7

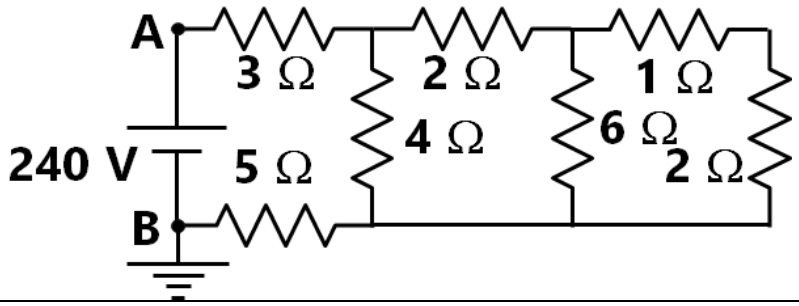

Fig. 8

3. For the circuit shown in fig. 9 and fig. 10, determine current through the resistors, voltage across the resistors and their power rating.

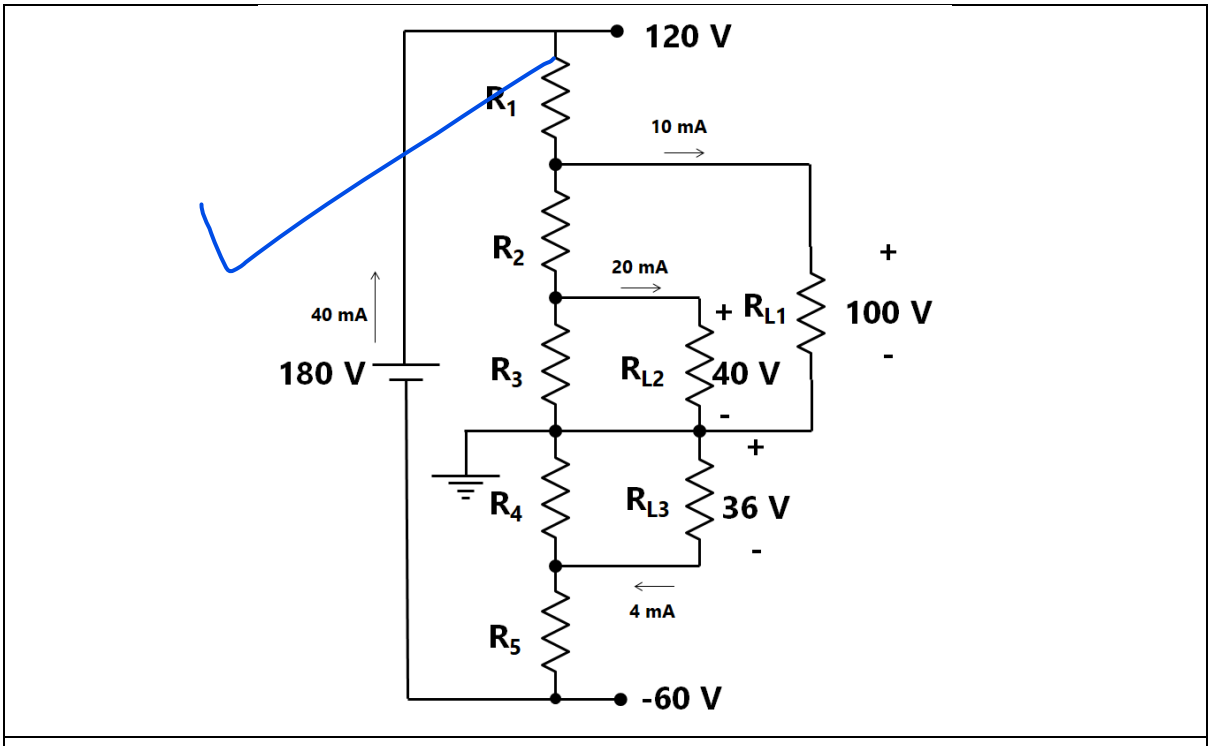

Fig. 9

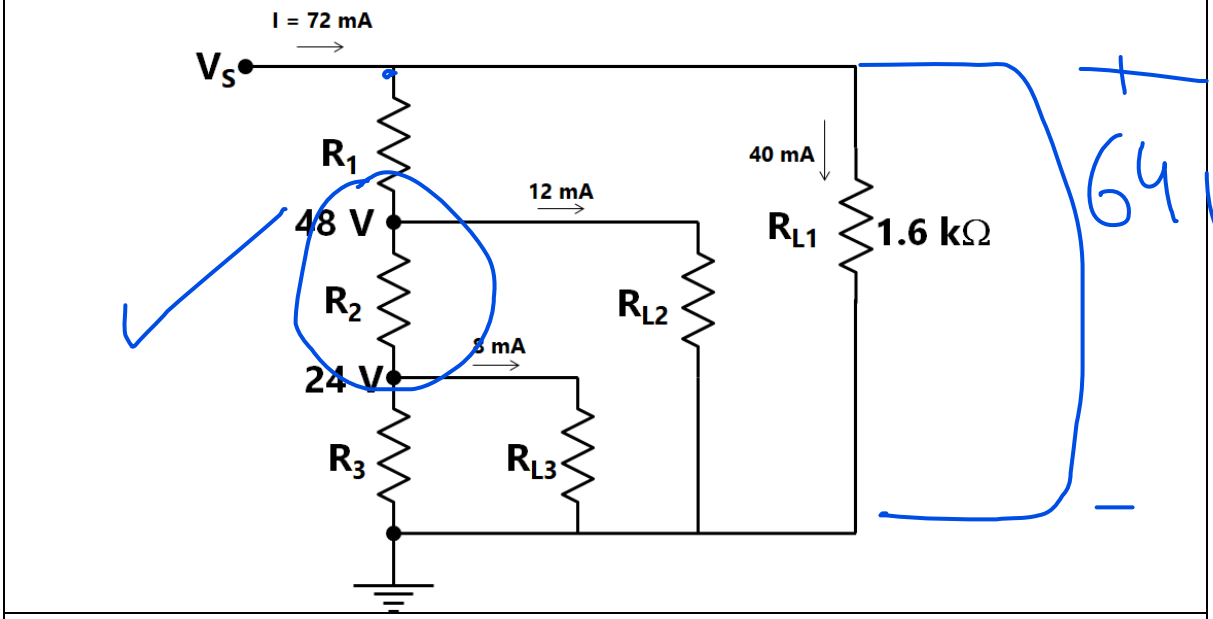

Fig. 10

---------- END OF QUESTIONS ----------

Answers:

Question 1:

Figure 1: R_T=3.6 kΩ

Figure 2: R_{AB} = 1.62 KΩ

Figure 3: R_{AB}=0.732 RΩ

Figure 4: R_{AB}= (5/6)R kΩ

Question 2:

Figure 5: R_{AB} = 1.75 KΩ

Resistor	Current through the resistor	Voltage across the resistor
10.4 KΩ	2 mA	20.8 V
9 KΩ	0.8 mA	7.2 V
6 KΩ	1.2 mA	7.2 V
12 KΩ	2.33 mA	27.96 V
3 K Ω	9.34 mA	28.02 V

Figure 6: R_{AB} = 4 Ω

Resistor	Current through the resistor	Voltage across the resistor
14 KΩ	0.5 A	7 V
10 KΩ	1 A	10 V
6 KΩ	0.5 A	3 V
20 KΩ	0.5 A	10 V
5 K Ω	4 A	20 V

Figure 7: R_{AB} = 16/3 Ω

Resistor	Current through the resistor	Voltage across the resistor
16 Ω (R1)	2 A	32 V
8 Ω	4 A	32 V
4 Ω	0	0
32 Ω	0	0
16 Ω (R5)	0	0

Figure 8: R_{AB} = 10 Ω

Resistor	Current through the resistor	Voltage across the resistor
1 Ω	8 A	8 V
2 Ω (R4)	12 A	24 V
2 Ω (R7)	8 A	16 V
3 Ω	24 A	72 V
4 Ω	12 A	48 V
5 Ω	24 A	120 V
6 Ω	4 A	24 V

Question 3:

Figure 9

Resistor	Current through the resistor	Voltage across the resistor	Power rating
R_1	40 mA	20 V	0.8 W
R_2	30 mA	60 V	1.8 W
R_3	10 mA	40 V	0.4 W
R_4	36 mA	36 V	1.296 W
R_5	~~36 mA~~ 40mA	24 V	0.96 W

Figure 10

Resistor	Current through the resistor	Voltage across the resistor	Power rating
R_1	32 mA	16 V	0.512 W
R_2	20 mA	~~48 V~~ 24V	0.96 W
R_3	12 mA	24 V	0.288 W
R_{L1}	40 mA	64 V	2.56 W
R_{L2}	12 mA	48 V	0.576 W
R_{L3}	8 mA	24 V	0.192 W