Sheet (5)

Q1:-Choose the correct answer

1. Two 1.0 kΩ resistors are in series and this series combination is in parallel with a 2.2 kΩ resistor. The voltage across one of the 1.0 kΩ resistors is 6 V. The voltage across the 2.2 kΩ resistor is

   (a) 6 V (b) 3 V (c) 12 V (d) 13.2 V

2. The parallel combination of a 330 Ω resistor and a 470 Ω resistor is in series with the parallel combination of four 1.0 kΩ resistors. A 10 V source is connected across the circuit. The resistor with the most current has a value of

   (a) 1.0 kΩ (b) 330 Ω (c) 470 Ω

3. In the circuit described in Question 2, the resistor(s) with the most voltage has a value of

   (a) 1.0 kΩ (b) 330 Ω (c) 470 Ω

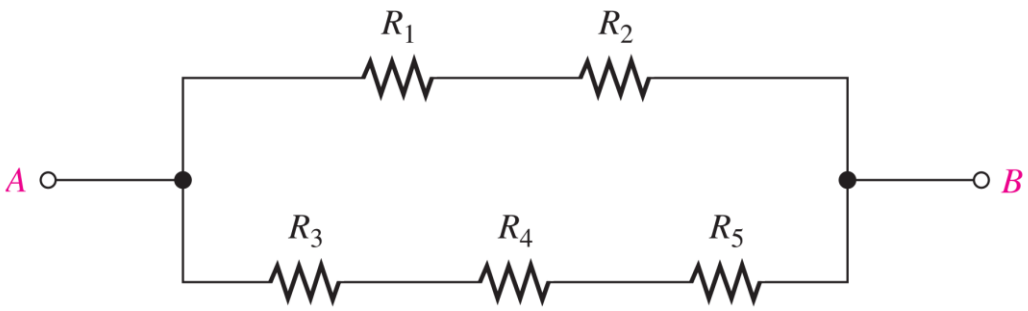
4. In the circuit described in Question 2, the percentage of the total current through any single 1.0 kΩ resistor is

   (a) 100% (b) 25% (c) 50% (d) 31.25%

5. The output of a certain voltage divider is 9 V with no load. When a load is connected, the output voltage

   (a) increases (b) decreases (c) remains the same (d) becomes zero

For the following figure



6. Which of the following statements are true?

   (a) R_1 and R_2 are in series with R_3, R_4, and R_5.

   (b) R_1 and R_2 are in series.

   (c) R_3, R_4, and R_5 are in parallel.

   (d) The series combination of R_1 and R_2 is in parallel with the series combination of R_3, R_4, and R_5

   (e) answers (b) and (d)

7. The total resistance of circuit shown can be found with which of the following formulas?

(a) $R_1 + R_2 + R_3 \parallel R_4 \parallel R_5$ (b) R1 ‖ R2 + R3 ‖ R4 ‖ R

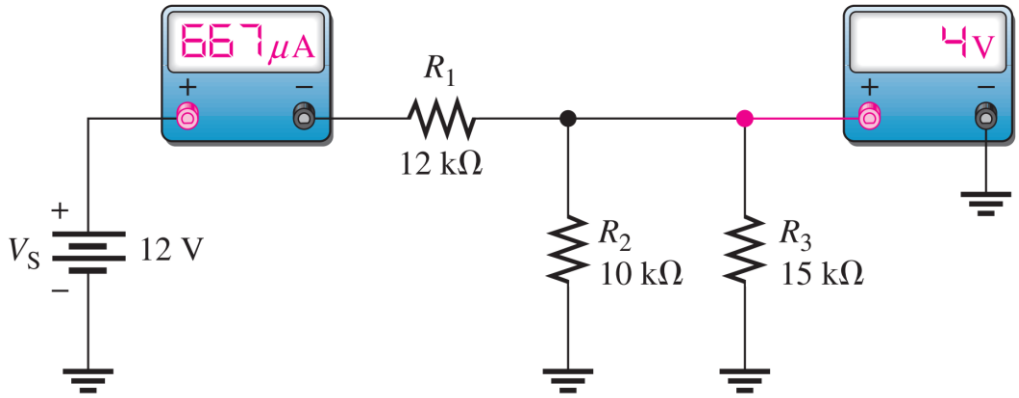
(c) (R1 + R2) ‖ (R3 + R4 + R5) (d) none of these answers

8. If all of the resistors in previous figure have the same value, when voltage is applied across terminals A and B, the current is

(a) greatest in R_5 (b) greatest in R_3, R_4, and R_5

(c) greatest in R_1 and R_2 (d) the same in all the resistors

For the following figure



9. The ammeter reading is too low, and the voltmeter reading is 5.45 V.

(a) R_1 is open.

(b) R_2 is open.

(c) R_3 is open.

10. The ammeter reading is 1 mA, and the voltmeter reading is 0 V.

(a) There is a short across R_1

(b) There is a short across R_2

(c) R_3 is open

11. The ammeter reading is near zero, and the voltmeter reading is 12 V.

(a) R_1 is open.

(b) R_2 is open.

(c) R_2 and R_3 is open.

12. The ammeter reading is 444 $\mu\Omega$ and the voltmeter reading is 6.67 V.

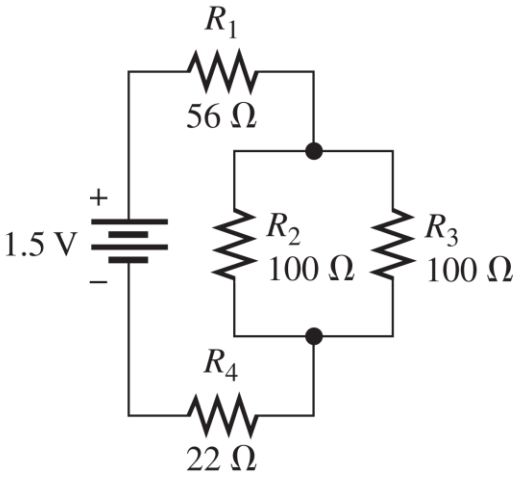
(a) R_1 is shorted.

(b) R_2 is open.

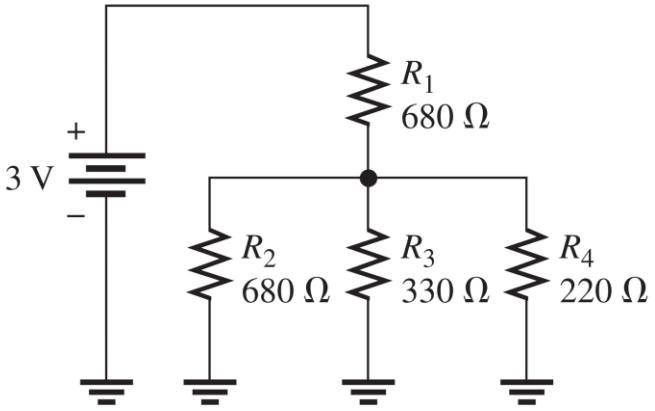
(c) R_3 is open.

Q2:-Answer the following questions

1. In each circuit of the following figure the series and parallel relationships of the resistors viewed from the source.

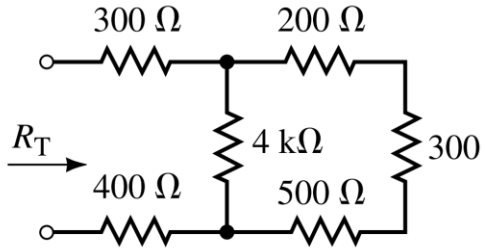


(a)

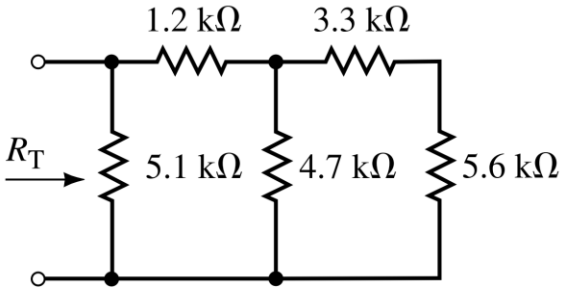


(b)

2. Determine the total resistance of each network of the following figure

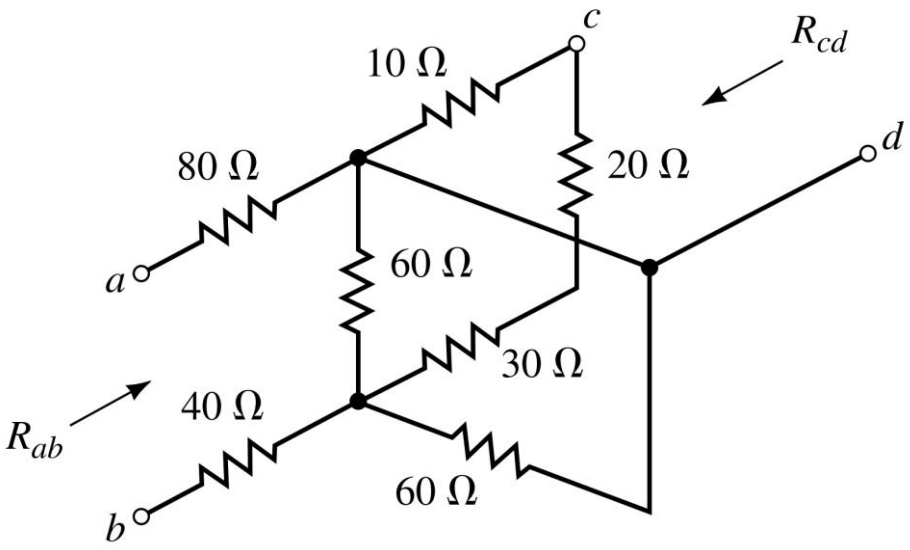


(a)

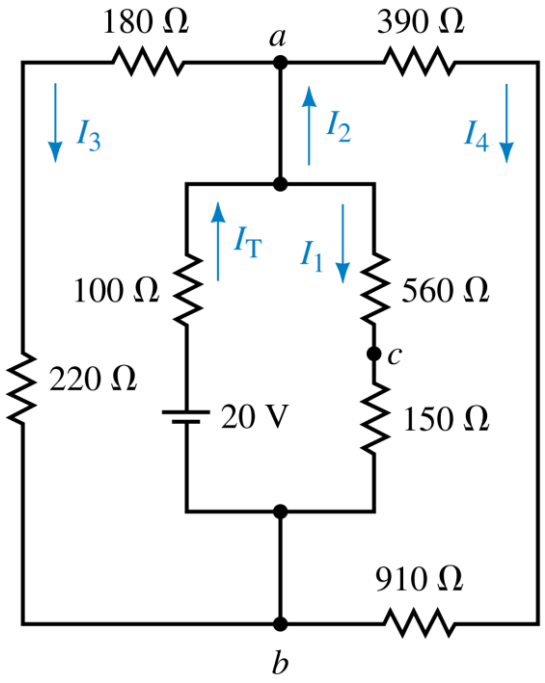


(b)

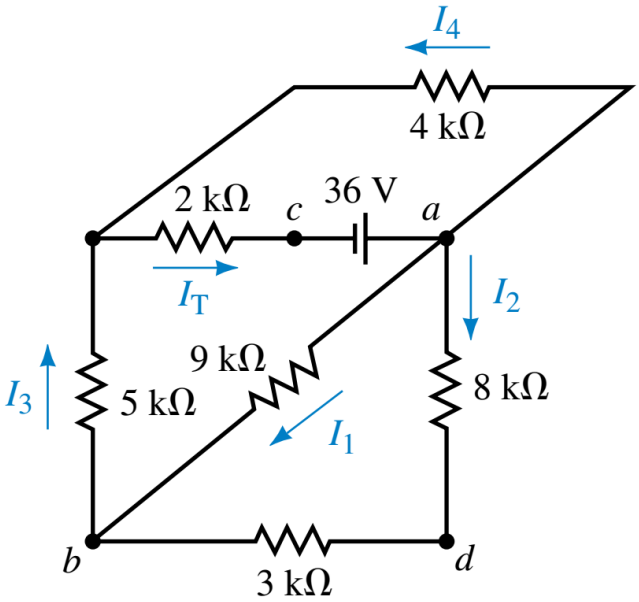
3. Calculate the resistances R_{ab} and R_{cd} in the circuit of the following figure



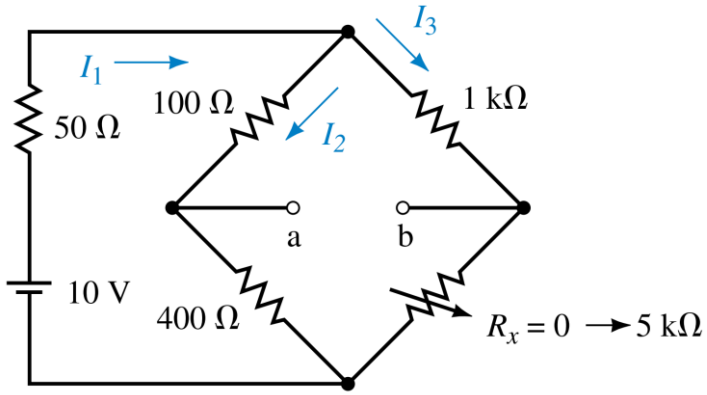
4. Refer to the circuit of the following figure, Find the following quantities:
   a. R_T
   b. I_T, I_1, I_2, I_3, I_4
   c. V_{ab}, V_{bc}.



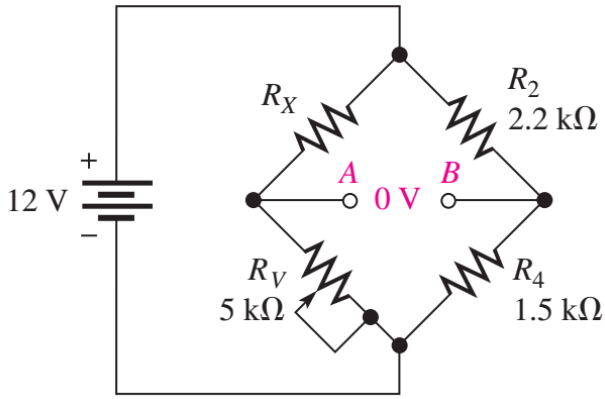
5. Refer to the circuit of the following figure, Find the following quantities:
   a. R_T (equivalent resistance "seen" by the voltage source).
   b. I_T, I_1, I_2, I_3, I_4
   c. V_{ab}, V_{bc}, V_{cd}



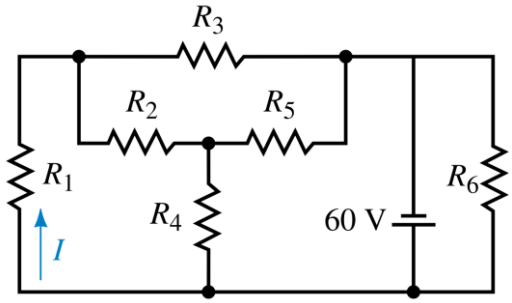
6. Calculate the voltage V_{ab} when $R_x = 0\ \Omega$ and when $R_x = 5\ k\Omega$.



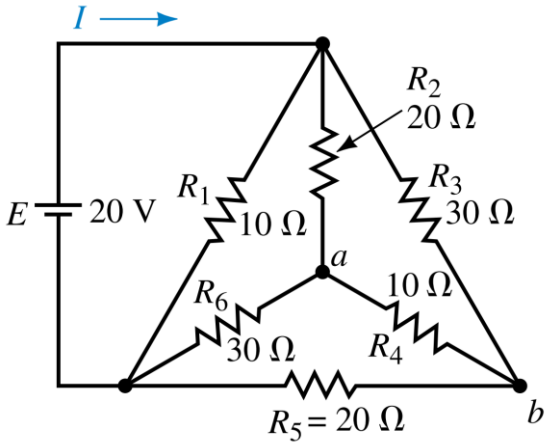
7. Determine the value of in the balanced bridge of the following figure.



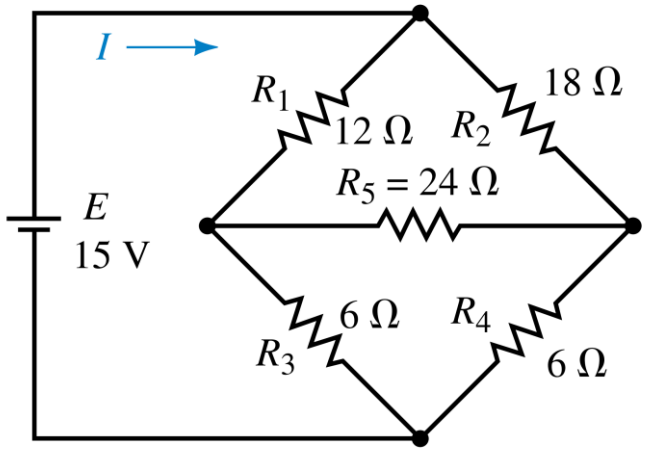
8. Using Δ-Y orY-Δ conversion, find the current I for the circuit of the following figure. All resistors are 4.5 kΩ.



9. Using Δ-Y orY-Δ conversion, find the current I for the circuit of the following figure.



10. Using Δ-Y orY-Δ conversion, find the current I for the circuit of the following figure.



11. Using Δ-Y orY-Δ conversion, find the current I for the circuit of the following figure.