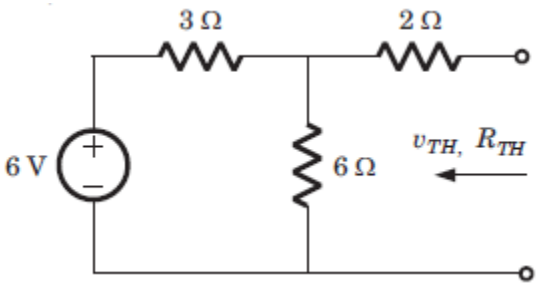
Department Of Electronics
L.S College, Muzaffarpur

Circuit for Q.1-Q.2



1. Vth = ?
a) 1 V
b) 2 V
c) 3 V
d) 4 V

Answer: d
Explanation: Vth = (6)(6)/(6 + 3) or 4 V.

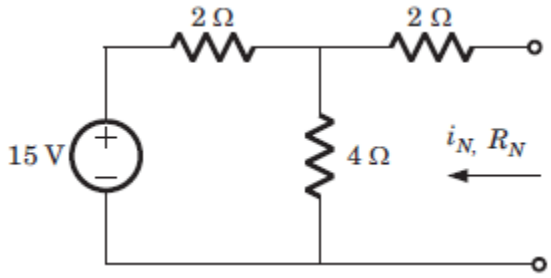
2. Rth = ? (in ohm)
a) 2
b) 3
c) 4
d) 5

Answer: c
Explanation: Rth = (3||6) + 2 or 4 ohm.

3. A battery has a short-circuit current of 30 A and an open circuit voltage of 24 V. If the battery is connected to an electric bulb of resistance 2 ohm^{-1}, the power dissipated by the bulb is
a) 80 W
b) 1800 W
c) 112.5 W
d) 228 W

Answer: c
Explanation: r = Voc/Isc = 1.2 ohm
Power used by bulb = (24 x 24) x 2/(1.2 + 2) x (1.2 + 2) or 11.5 Watt.

Circuit for Q.4-Q-5



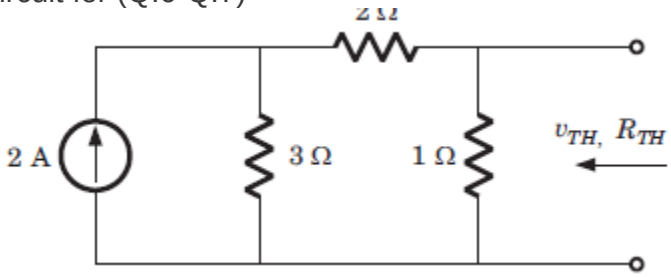
4. In = ?
a) 1.5 A
b) 3 A
c) 6 A
d) 10 A

Answer: b
Explanation: V1 = (15/2)/(1/4 + 1/2 + 1/2)
In = Isc = V1/2 = 3 A.

5. Rn = ? (in ohm)
a) 10/3
b) 4
c) 6
d) 10

Answer: a
Explanation: Rn = (2||4) + 2.

Circuit for (Q.6-Q.7)



6. Vth = ?
a) -2 V
b) -1 V
c) 1 v
d) 2 V

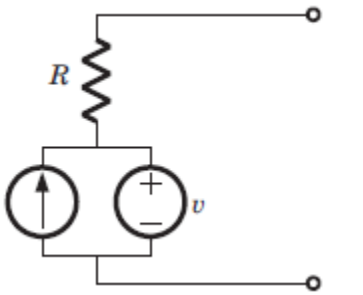
Answer: c
Explanation: Vth = (2)(3)(1)/3+3 = 1V.

7. Rth = ? (in ohm)
a) 5/6
b) 6/5

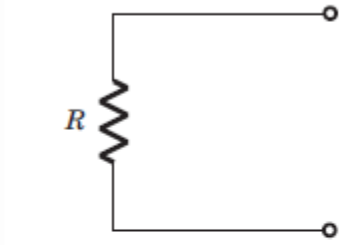
c) 5/3
d) 3/5

Answer: a
Explanation: Rth = 1||5 or 5/6 ohm

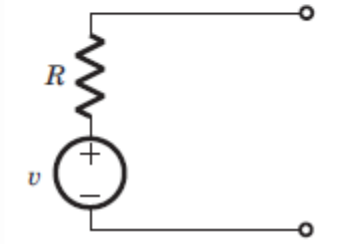
8. The equivalent to the given circuit is



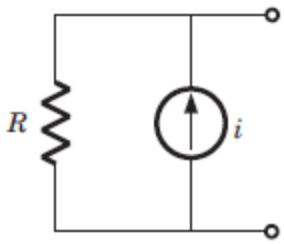
a)



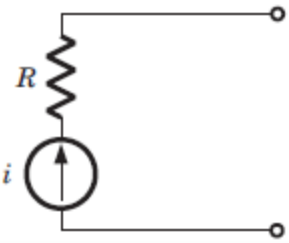
b)



c)

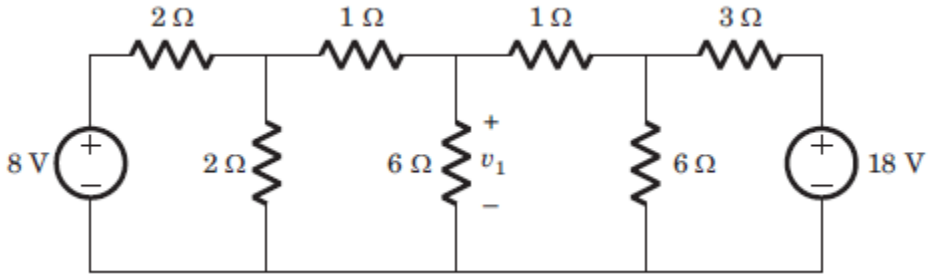


d)



Answer: b
Explanation: After killing all source equivalent resistance is R. Open circuit voltage is v1.

9. V1 = ?



a) 6 V
b) 7 V
c) 8 V
d) 10 V

Answer: a

(A) If we solve this circuit direct, we have to deal with three variable. But by simple manipulation variable can be reduced to one. By changing the LHS and RHS in Thevenin equivalent

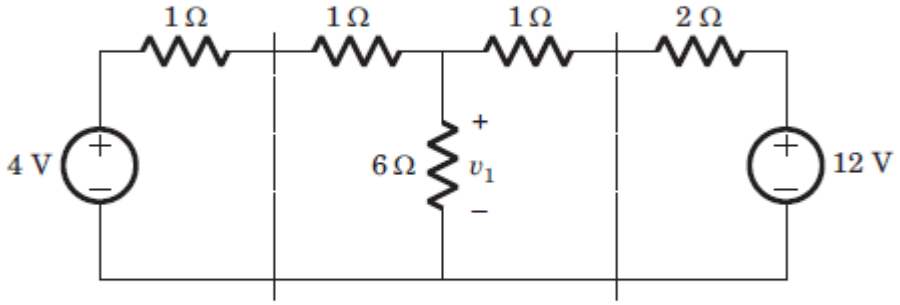
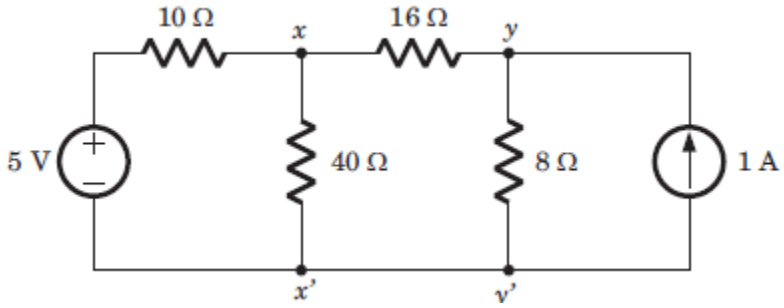


Fig. S1.4.10

$$v_1 = \frac{\frac{4}{1+1} + \frac{12}{1+2}}{\frac{1}{1+1} + \frac{1}{6} + \frac{1}{1+2}} = 6 \text{ V}$$

Explanation:

10. i1 = ?



a) 3 A
b) 0.75 mA
c) 2 mA
d) 1.75 mA

Answer: b

(B) If we solve this circuit direct, we have to deal with three variable. But by simple manipulation variable can be reduced to one. By changing the LHS and RHS in Thevenin equivalent

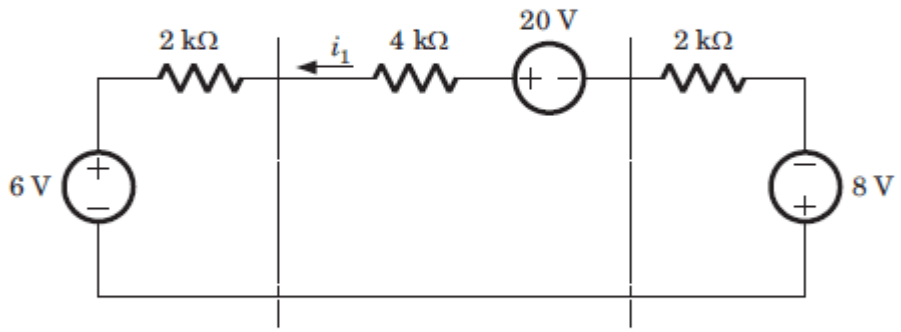


Fig. S1.4.11

$$i_1 = \frac{20 - 6 - 8}{2k + 4k + 2k} = 0.75 \text{ mA}$$

Explanation: