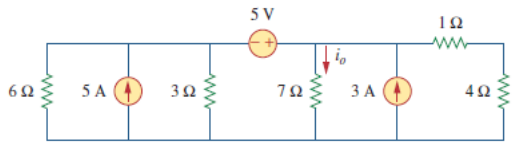
Question 1

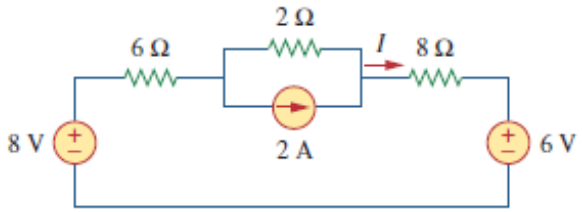
Find i_0 in the circuit shown below, use source transformation:



Ans: 1.78 A.

Question 2

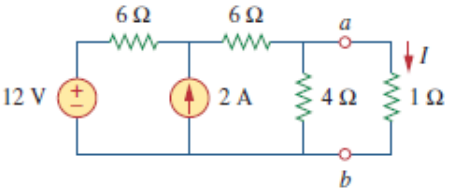
Find *I* in the circuit of the following Fig. using the superposition principle.



Ans: 375 mA

Question 3

Using Thevenin's theorem, find the equivalent circuit to the left of the terminals in the circuit of given Fig. Then find *I*.

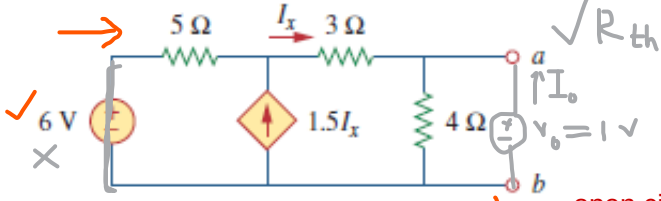


Ans: 6 V, 3Ω, and 1.5 A.

Question 4

super mesh

Find the Thevenin equivalent circuit of the circuit in given Fig. to the left of the terminals.



open circuit

Ans: V_{Th} =5.333 V, R_{Th} = 444.4 mΩ.

$R_{th} = \frac{1}{I_o} = 0.444444\Omega$

outer loop.

$5(I_x - 1.5I_x) + 3I_x + 1 = 0$

$\therefore I_x = -2\,A$

$-6 + 5(I_x - 1.5I_x) + 3I_x + 4I_x = 0$

$\therefore I_x = 1.33A$

$\therefore V_{th} = 4I_x = 5.33\,V$

voltage accross 4 ohm is 1 V

$\therefore I_{4\Omega} = \frac{1}{4}\,A$

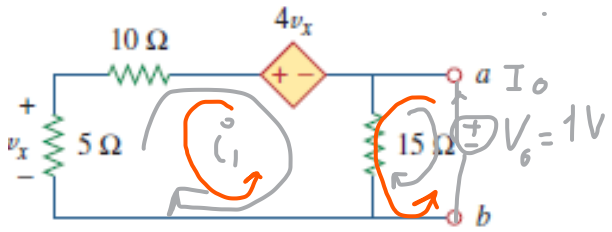
$\therefore I_o = I_{4\Omega} - I_x = 2.25$

$I = 4.875$

$I_x = 10$

Question 5

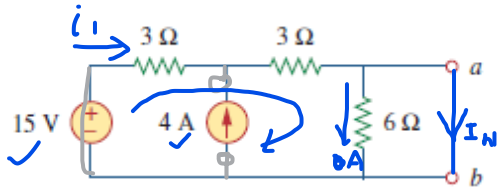
Obtain the Thevenin equivalent of the circuit in following Fig.



Ans: V_{Th} =0 V, R_{Th} =-7.5 Ω.

Question 6

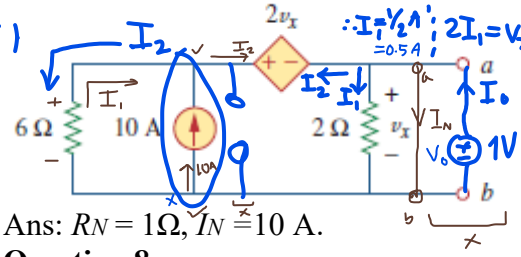
Find the Norton equivalent circuit for the circuit in the given Fig., at terminals *a-b*.



Ans: R_N =3 Ω, I_N = 4.5 A.

Question 7

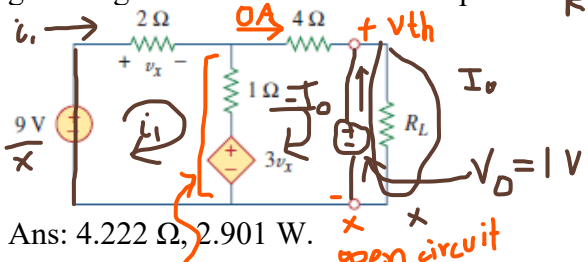
Find the Norton equivalent circuit of the circuit in the following Fig. at terminals *a-b*.



Ans: R_N = 1Ω, I_N =10 A.

Question 8

Determine the value of R_L that will draw the maximum power from the rest of the circuit in the given Fig. Calculate the maximum power.



Ans: 4.222 Ω, 2.901 W.