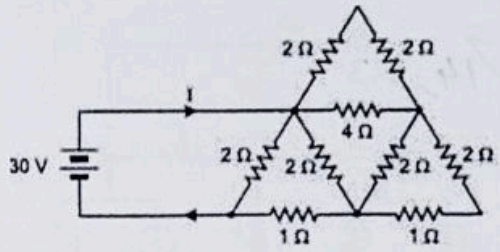
1. Find the power supplied by the voltage source

$R_{eq} = 1.055\ \Omega$

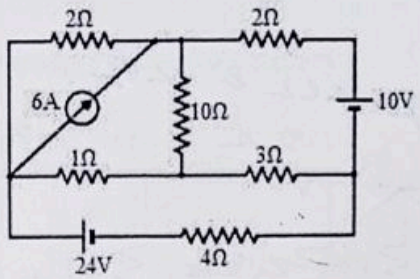
$I = 28.45\ A.$

$P = 853.6\ W.$



2. Determine current in 4Ω resistance using Kirchhoff's laws

$I_{4\Omega} = 4.1\ A$



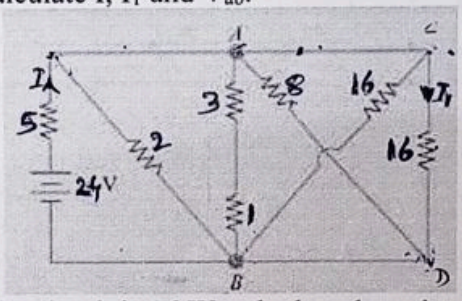
3. In the circuit shown in figure, calculate I, I_1 and V_{ab}.

$I = 4\ A$

$I_1 = 0.25\ A$

$V_{AB} = 4\ V.$

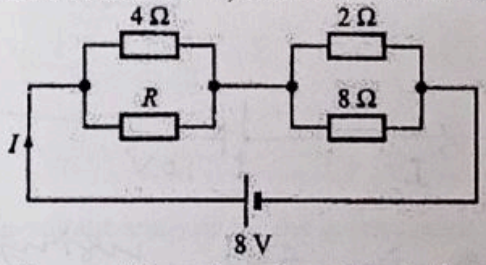
$R_{eq} = 6\ \Omega$



4. If the total power dissipated in the circuit is 16 W, calculate the value of 'R' & the total current.

$R = 6\ \Omega$

$I = 2\ A$



5. Determine the voltage across and current through each resistor in the circuit.

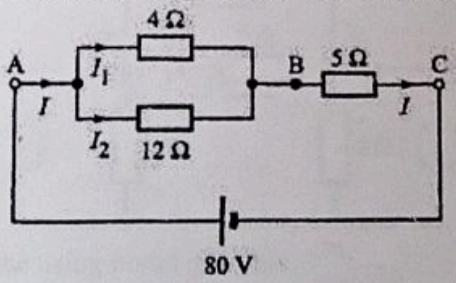
$V_1 = V_2 = 30\ V.$

$V_3 = 50\ V.$

$I_1 = 7.5\ A$

$I_2 = 2.5\ A.$

$I = 10\ A$

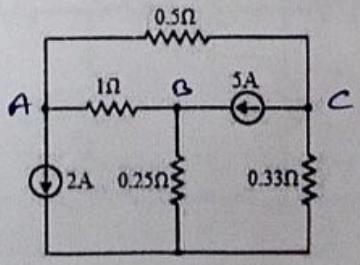


6. Using nodal analysis find the current in different resistances

$V_A = -1.5\ V$

$V_B = 0.7\ V.$

$V_C = -1.6\ V.$



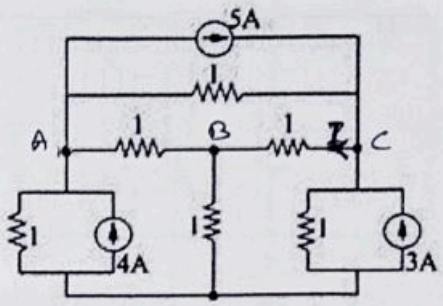
7. Find the current I using nodal analysis. All resistances are given in Ω

$V_A = 1.5\,V$

$V_B = 1.75\,V.$

$V_C = 3.75\,V$

$I = 2A$

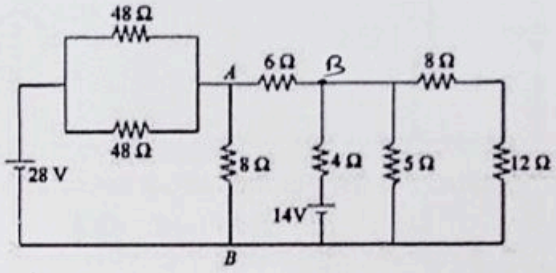


8. Using nodal analysis find the power supplied by 14V battery

$V_A = 7\,V.$

$V_B = 7\,V.$

$I_{4\Omega} = \frac{7}{4}\,A$

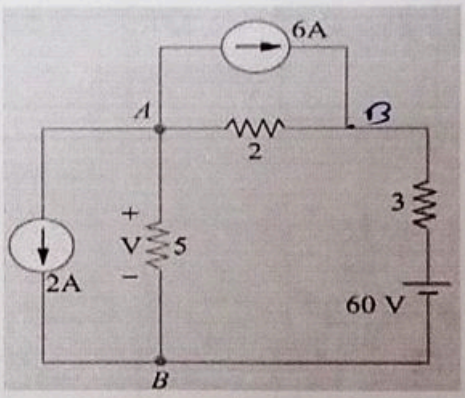


9. Find the voltage v using Nodal analysis

$V = 19\,V.$

$V_A = 19V$

$V_B = 42.6\,V.$

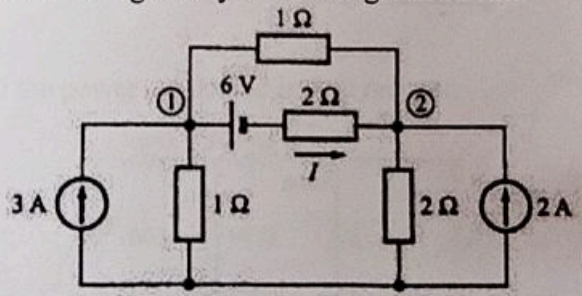


10. Find the current 'I' using node-voltage analysis for the given circuit.

$V_1 = 3.82V$

$V_2 = 2.36\,V.$

$I = -2.27A.$

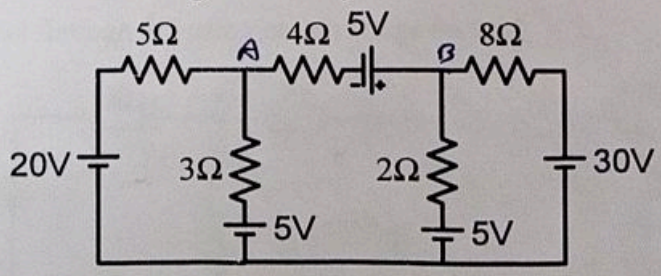


11. Evaluate current in 4Ω resistance using nodal analysis

$V_A = 9.2\,V.$

$V_B = 11.2\,V.$

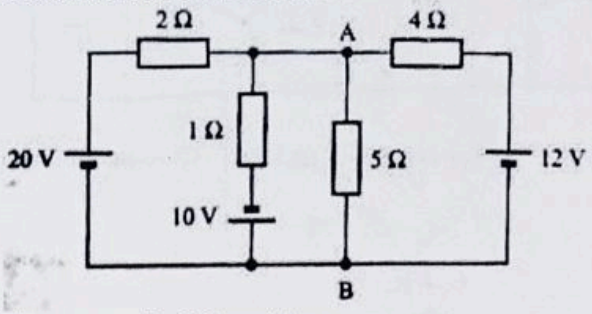
$I = 0.75\,A.$



12. Using nodal analysis find the current in 5 Ω resistance.

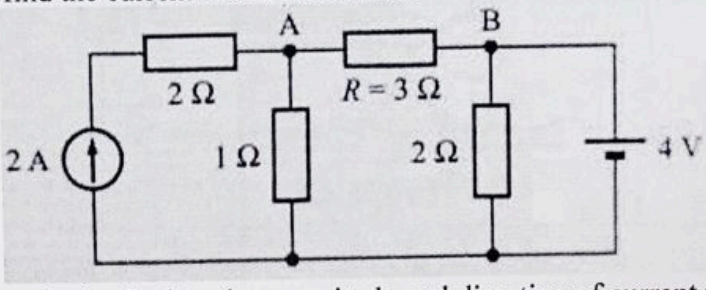
$I = 0.307A$.

$V_A = 1.535V$.



13. Using nodal analysis find the current in 3Ω resistance.

$I = 0.5A$.

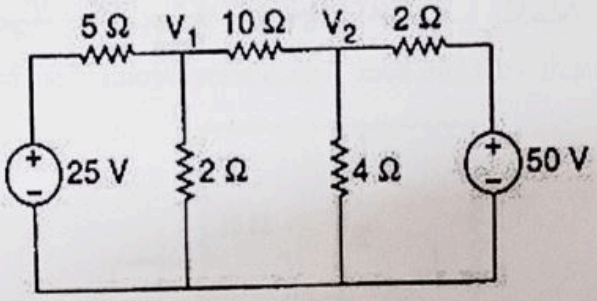


14. Using nodal voltage method calculate the magnitude and direction of current through 10 Ω resistor.

$V_1 = 10.07V$.

$V_2 = 30.59V$.

$I = 2.05A$.



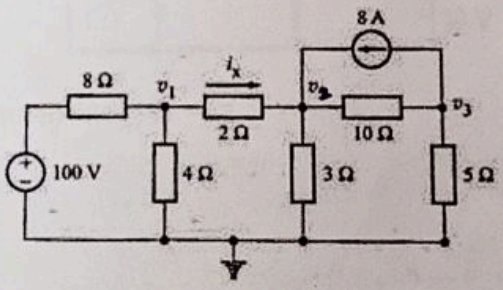
15. Using nodal analysis find the current i_x.

$V_1 = 25.89V$.

$V_2 = 20.31V$.

$V_3 = -19.89V$.

$I_x = 2.79A$.



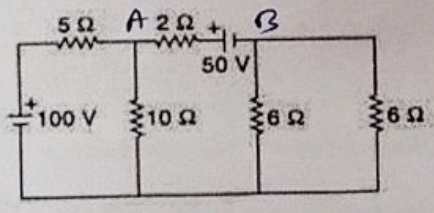
16. Using nodal analysis, find the power dissipated in 2 Ω resistor.

$V_A = 60V$

$V_B = 6V$.

$I = 2A$

$P = 8W$.

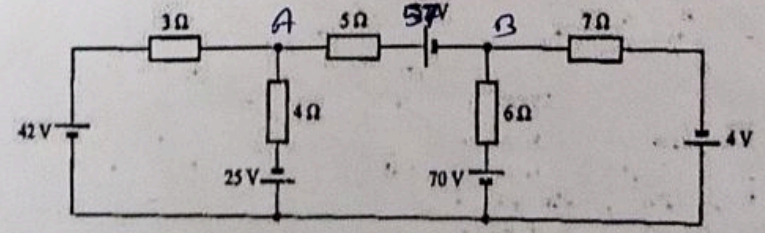


17. Find the value of current through 5Ω using node voltage method.

$V_A = 27V$.

$V_B = 10V$.

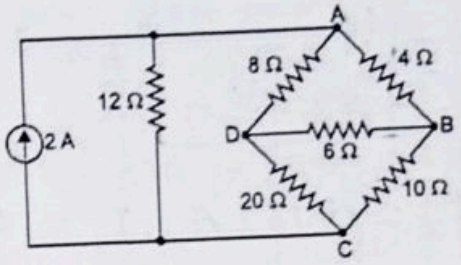
$I_{5\Omega} = 8A$



18. Using mesh analysis find the current in 4Ω and 20Ω resistance

$I_{4\Omega} = 0.75\,A.$

$I_{20\Omega} = 0.375\,A$



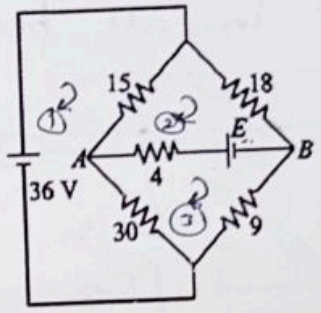
19. Find the value of E such that the current in 4Ω resistance is 0A. Use mesh analysis method

$E = 12\,V$

$I_1 = 2.13\,A$

$I_2 = 1.33\,A$

$I_3 = 1.33\,A$



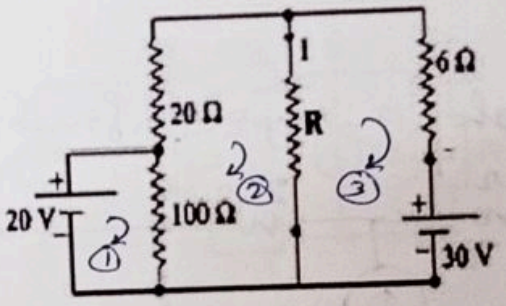
20. Using mesh analysis to find the unknown resistance R such that the current I is 2.88A

$I_1 = 0.48\,A$

$I_2 = 0.28\,A$

$I_3 = -2.6\,A$

$R = 5\Omega$



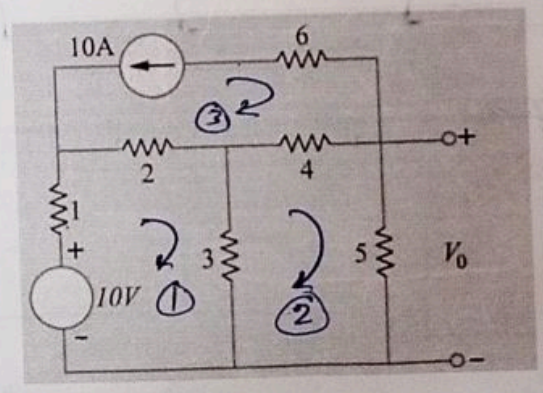
21. Find the voltage V_0 by using mesh analysis

$V_0 = -21.43\,V.$

$I_1 = -3.81\,A.$

$I_2 = -4.29\,A$

$I_3 = -10\,A.$

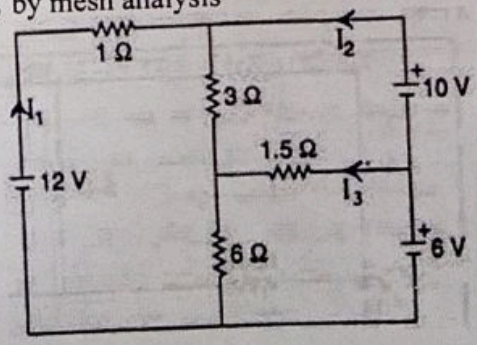


22. Calculate the current I_1, I_2 & I_3 by mesh analysis

$I_1 = -4\,A.$

$I_2 = 6.67\,A.$

$I_3 = -1.34\,A.$



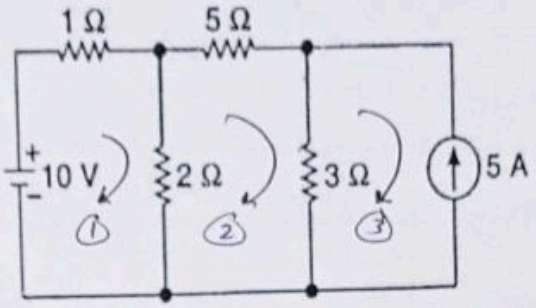
23. Using mesh method, calculate the current through 2 Ω resistor.

$I_1 = 2.69\,A$

$I_2 = -0.961\,A$

$I_3 = -5\,A.$

$I_{2\Omega} = 3.651\,A.$



24. Using mesh analysis, find the current through 6 Ω, 12 Ω and 30 Ω resistor.

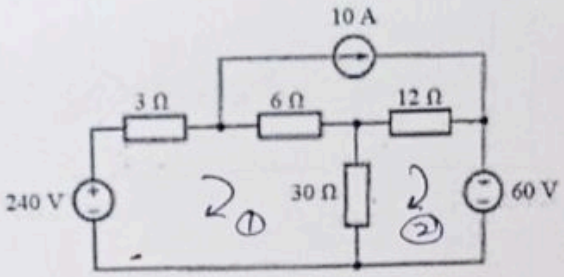
$I_1 = 19.51\,A$

$I_2 = 15.37\,A$

$I_6 = 9.51\,A$

$I_{12} = 5.37\,A$

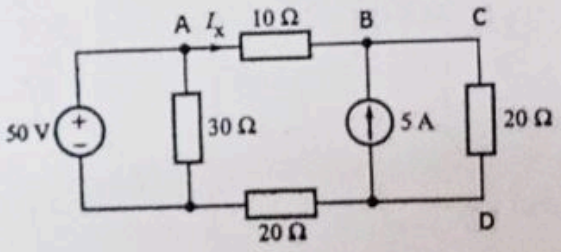
$I_{30} = 4.14\,A.$



25. Determine the current Ix through 10 Ω resistor (AB branch) and power in 20 Ω resistor (CD branch) using mesh analysis.

$I_x = 1\,A$ (AB)

$P = 320\,W$ (CD)

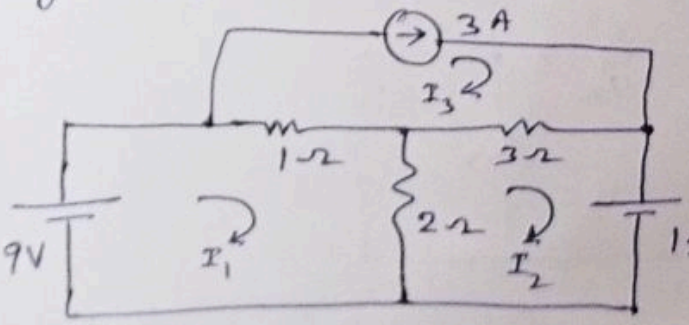


26. Using mesh analysis find I_1, I_2 & I_3.

$I_1 = 1.91\,A$

$I_2 = 3.55\,A$

$I_{3\Omega} = 1.64\,A$

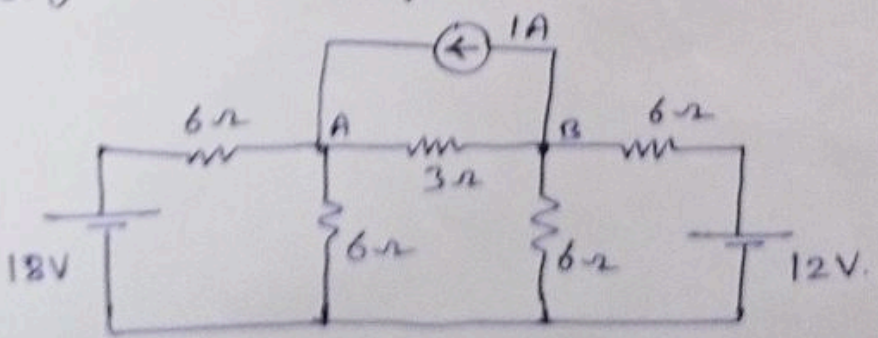


$I_1 = 4.91\,A$

$I_2 = 1.36\,A$

$I_3 = 3\,A.$

27. Using nodal analysis find current in 3Ω.



$V_A = 9\,V.$

$V_B = 6\,V.$

$I = 1\,A.$

H.A.-I

~~7(1): [illegible]~~

7(2): 14, 23

10(1): ~~28, 29~~ 14, 23

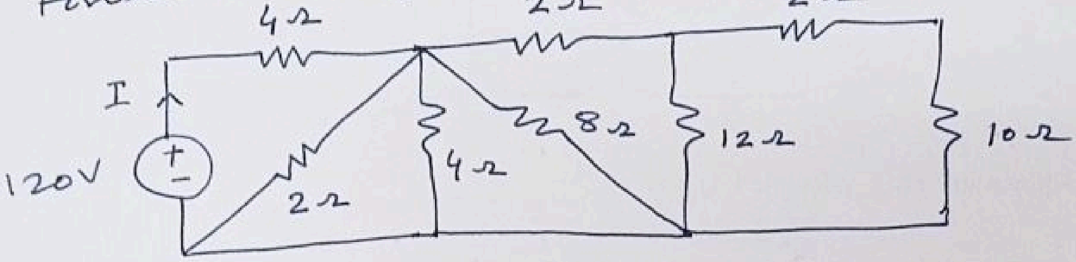
10(2): 10, 28

7(1): 10, 28

R.S.: Complete Sol. on 27/4

Series-Parallel

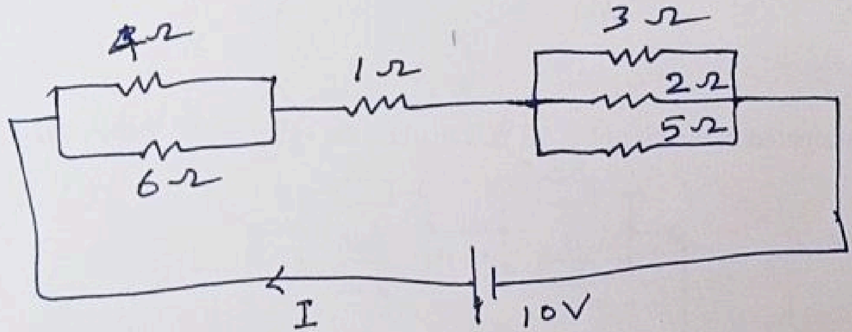
① Find I, using KCL & KVL.



$R_{eq} = 5\,\Omega$

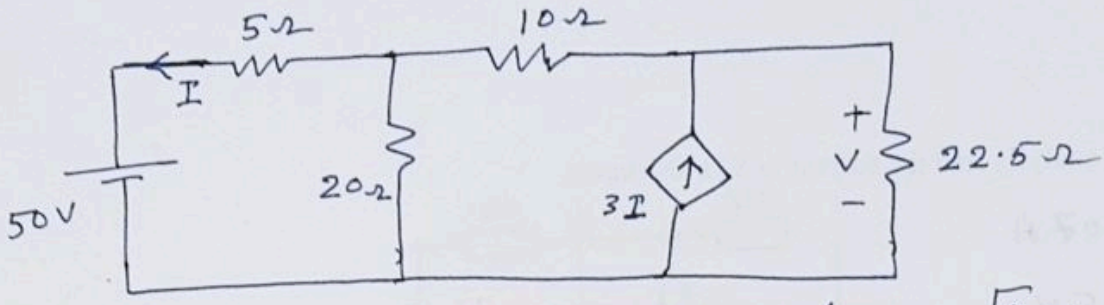
$I = 24\,A$

②



Find power in 5 Ω using KCL & KVL.

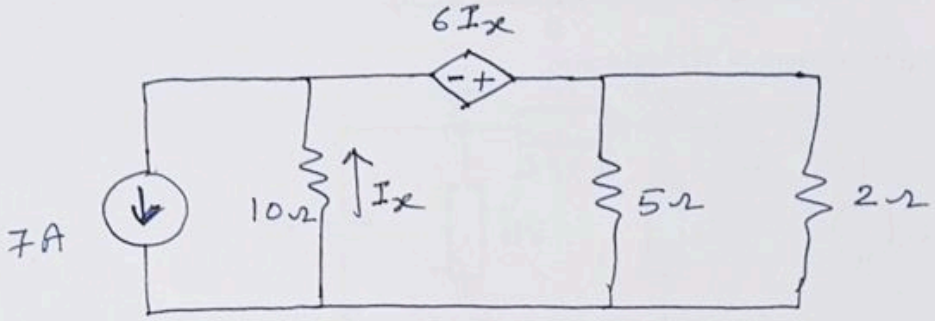
(4)



Find I & V using mesh analysis

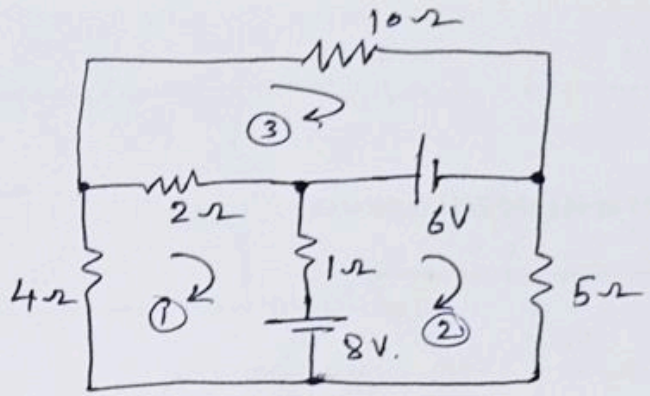
Ans: I = 6A
V = 180V

(5)



using nodal analysis find I_x.

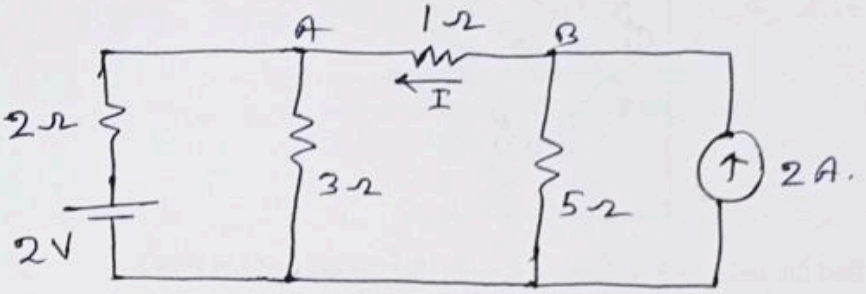
28.



Find current in 1Ω using mesh analysis.

$I_1 = -1.03A$, $I_2 = 0.162A$, $I_3 = 0.33A$, $I = 1.188A$.

29. Find current in all branches using nodal analysis

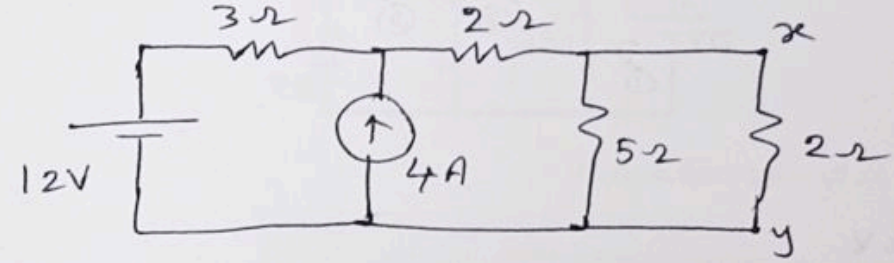


$V_A = 2.67V$.

$V_B = 3.89V$.

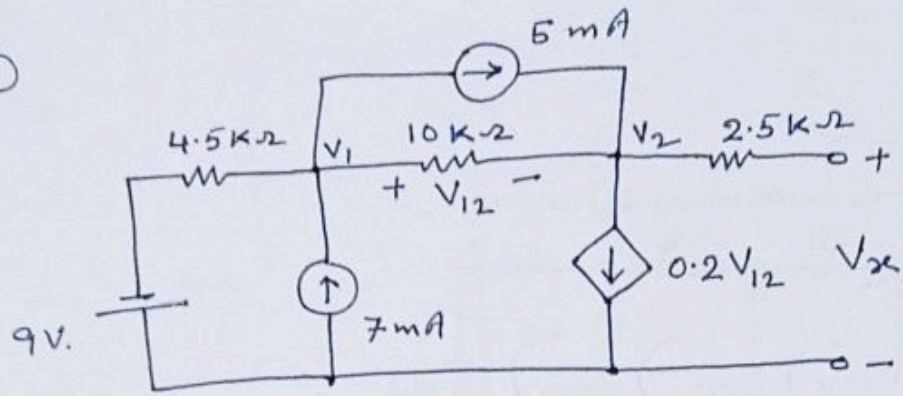
$I = 1.22A$.

30. Using mesh analysis find power in 2Ω (x-y)



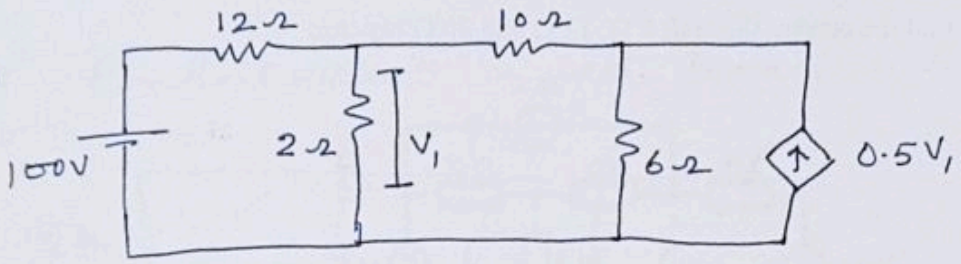
$I_{2\Omega} = 2.67A$, $P = 14.26W$.

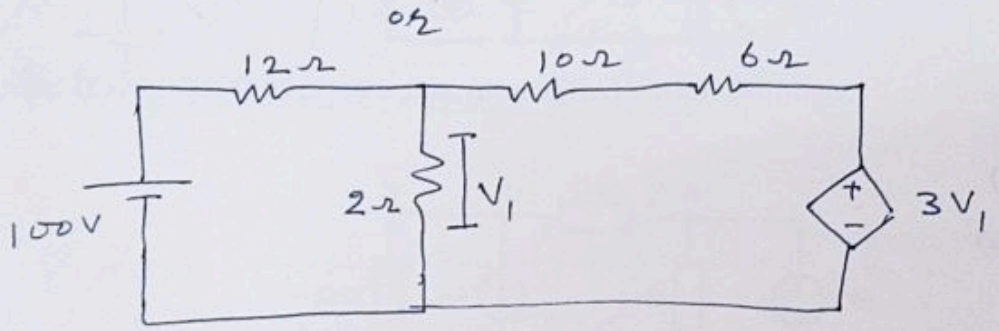
①



Find V_x using nodal analysis. Ans: $V_x = -133.6$ volts.

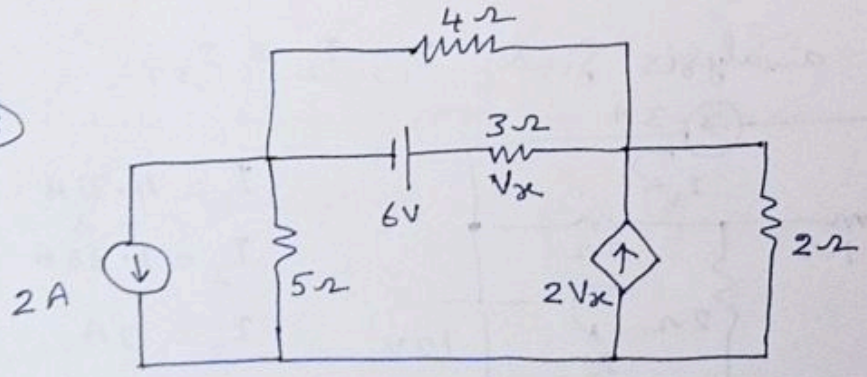
②





Find V_1 using mesh analysis. Ans: 18.2 V

③



Find V_x using mesh/Nodal analysis. Ans: 22.5 V.