

My Lectures from : Purcell Chapter 4

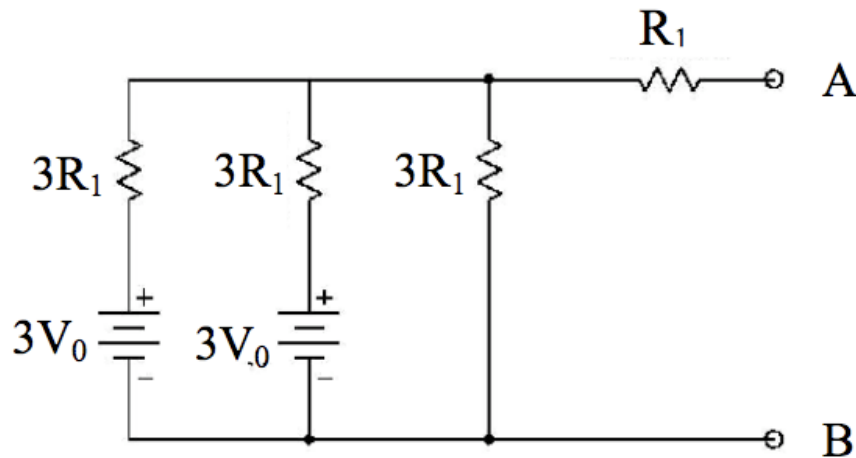
Web Notes : Lecture Notes #3 and #4

Other Notes: Current; DC_circuits

Purcell Problems:

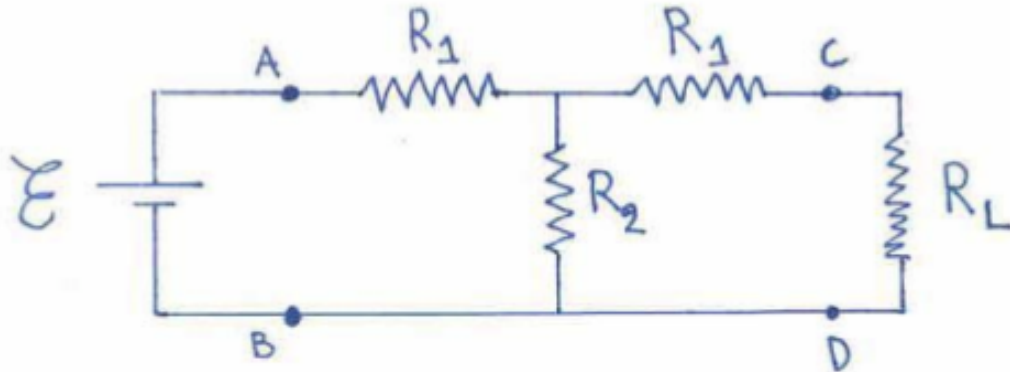
- 4.16 Input resistance
- 4.17 Internal resistance
- 4.18 Maximum power
- 4.19 Ohmmeter
- 4.20 Black box
- 4.21 Thevenin equivalence
- 4.22 Greatest power
- 4.25 Relaxation time
- 4.31 Resistor cube
- 4.32 infinite network
- 4.33 Minimum power

1. Consider the circuit shown below:



Calculate the Thevenin equivalent circuit.

2. Consider the network shown below



- Introduce on the figure arrows indicating the emf and the currents flowing in the branches.
- Write down a system of equations using Kirchoff's laws that enables you to solve for all unknown currents.
- Solve for the unknown currents.
- What if the effective resistance that the emf "sees", i.e., what is the total resistance to the "right" of points A and B
- In what follows, assume that R_1 and R_2 are magically adjusted so that the effective resistance just calculated is equal to R_L .

Find R_2 in terms of R_1 and R_L .

Find the voltage drop on R_L (i.e., $V_C - V_D$ as identified on the figure) as a function of E, R_1 and R_2 .