Tutorial 1
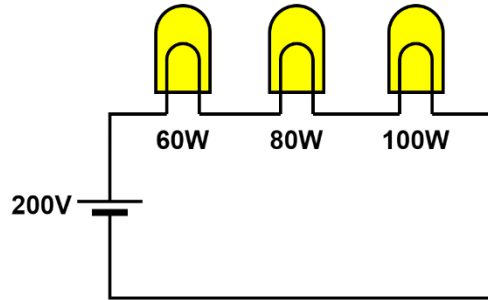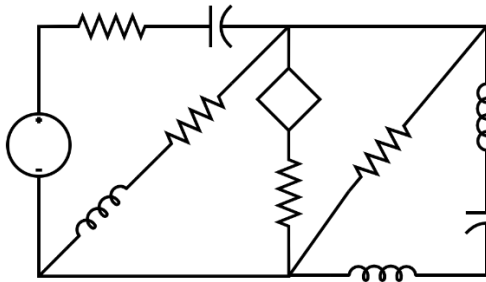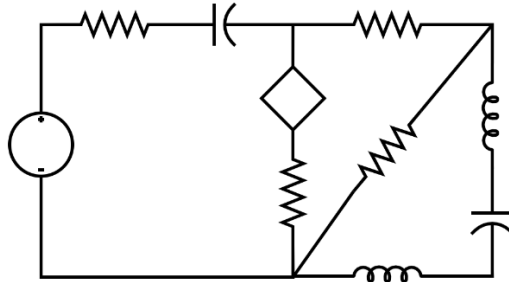
1) Three light bulbs are connected to a 200 V battery in series. The bulbs are consuming 60 W, 80 W, and 100 W power as shown below. Find the current 'I' through it.

2) The current through a 0.2 Henry inductor is $i = 5te^{-2t}$ A. Find the voltage across it and the energy stored in the inductor?

3) A certain circuit element has the current $i = 10e^{-5000t}$ A and voltage $v = 50(1 - e^{-5000t})$ V. Find the total energy transferred during $t \geq 0$.

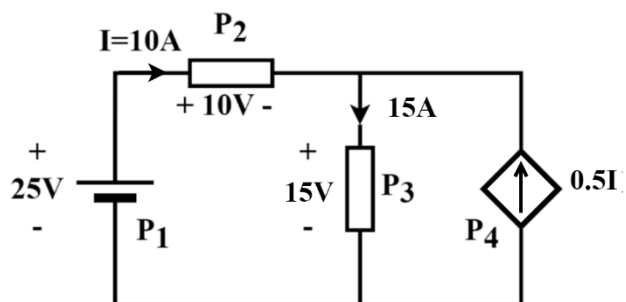4) Find the number of node, branch, mesh, and loop in the given figures 4(a) and 4(b).
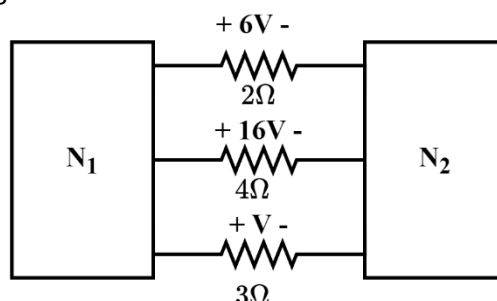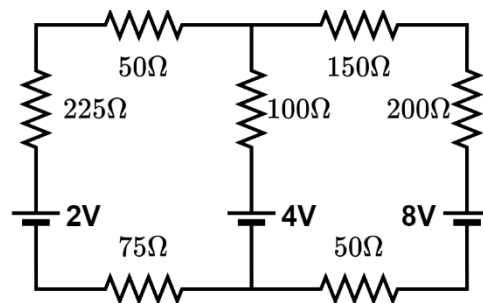

4 (a)   **4 (b)**

5) Calculate the power supplied or absorbed by each element in figure and show $\sum P_{absorbed} = \sum P_{supplied}$
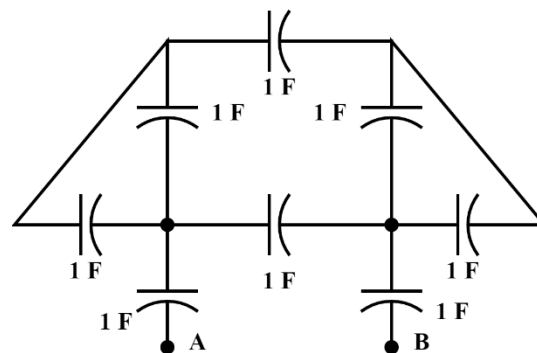

6) In the interval $0 < t < 5\pi$ ms, a 20 μF capacitor has a voltage $V = 100 \sin 200t$ (V). Find the charge, power, and energy.

7) The two electrical network N_1 and N_2 are connected through three resistors as shown in figure. Find the voltage across 3Ω resistor.

8) Find the current going out from the positive terminal of the 2V battery using mesh analysis.

9) Find the equivalent capacitance between A and B.

10) Find the equivalent resistance between A and B.