1. Problem 7.1 in your textbook.

2. Problem 7.7 in your textbook.

3. Problem 7.8 in your textbook.

4. Problem 7.10 in your textbook.

5. Problem 7.11 in your textbook.

6. A battery that provides an EMF, $\mathcal{E}$, has an internal resistance, $r$, such that the voltage, $V$, produced by the battery is given by $V = \mathcal{E} - Ir$, where $I$ is the current being produced by the battery. (This is true for batteries and power supplies in general.) If we connect an external resistor, $R$, across the battery, what value should $R$ have to produce the greatest possible power dissipation in the resistor, $R$? (ie the most efficient transfer of energy from the battery to $R$)