Chapter 4 Question #2

A 12 volt battery is given a 20 minute charge at a steady 10amps. During the process, the battery gets hot and loses 10kJ of heat. What is the change in internal energy of the battery?

1) Not enough information is given to solve this problem

2) +134kJ

3) -7.6kJ

4) +4.4kJ

LO#4

Chapter 4 Question 2 Answer:

(2) +134 kJ

P=VI = 12 V * 10 A = 120 W. The total energy given to the battery is therefore power * time = 120 W * 1200 seconds = 144,000 J. The battery then loses 10 kJ so the net increase in internal energy is +134 kJ.

Class Response:

Question 3 : Question 3