

Question 1

A bulb is connected to a battery. When the switch is closed the bulb lights up and also produces heat.

Which of the following is true?

1. Switch closed \rightarrow battery loses energy;
Switch open \rightarrow battery loses energy.
2. Switch closed \rightarrow battery loses energy;
Switch open \rightarrow battery gains energy.
3. Switch closed \rightarrow battery loses energy;
Switch open \rightarrow battery energy constant.
4. Switch closed \rightarrow battery energy constant;
Switch open \rightarrow battery loses energy.
5. Switch closed \rightarrow battery energy constant;
Switch open \rightarrow battery gains energy.
6. Switch closed \rightarrow battery energy constant;
Switch open \rightarrow battery energy constant.

Question 2

A 9.0 V battery is connected to a bulb. In a certain period of time, total charge 1 C of charge flows around the circuit. In a later period of time, total charge 3 C flows around the circuit.

Consider the amount of energy that the bulb supplies to the two collections of charge. Which of the following is true?

1. Supplies 9.0 J to 1 C and also to 3 C .
2. Supplies 9.0 J to 1 C and 27 J to 3 C .
3. Supplies 9.0 J to 1 C and 3 J to 3 C .