



Battery session questions

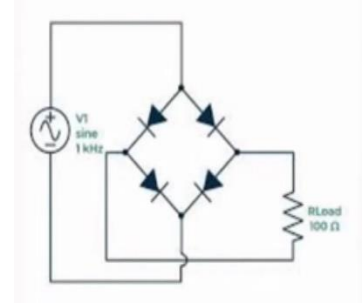
Question 1

What else in the circuit consumes power besides the LED ?

Answer:

The resistance is considered as a power sink as it dissipates power.

This dissipated power (P) can be calculated using Ohm's Law and the formula for power : $P=I^2 \cdot R$ where I is the current flowing through the resistor, R is the resistance .



Question 2

- 1. What is the average power consumed by the air conditioners and is the power consumption constant as LEDs ?**
- 2. Why should I close the doors and windows of the air conditioned rooms and how does it affect the power dissipation?**

Answer:

- 1. On average , air conditioner will consume between 3000 and 3500 watts per hour but the actual consumption is not constant . It varies according to these factors:**

- The air conditioners' capacity.
- The model of the conditioner itself as older model uses more electricity than Those utilizing modern technology.
- The temperature in your region will also affect the energy consumption.
- Maintenance and Condition

2. Air conditioner re-circulates the room air and doesn't take air from outside. So if you open windows and doors, outside air will come inside the room and increase the room temperature so it is advised to close keep the room close .Also it improves the energy efficiency of the air conditioning system. The air conditioner can operate more effectively and consume less energy to achieve and maintain the desired indoor temperature.

Question 3

A lipo battery of 1000mAh , 3.7 v , 35 c .

Is it reasonable to have an internal resistance of 0.5 ohms?

Answer:

0.5 ohms is quite higher than the typical value. Internal resistance values for a LiPo battery can range from 1 milliohms to 200 milliohms .

Question 4

How to calculate the capacity of a battery?

1. Charge the Li-ion battery fully to prepare it for the discharge.
2. connect the battery to a constant current load such as a resistor and calculate the current.
3. Begin discharging the battery at the calculated current.
4. Stop the discharge when the battery voltage reaches its cut off voltage which can be determined by constantly measuring the voltage by using a multimeter .
5. Calculate the capacity using the formula $Q=I \times t$ where I is the current in milli amperes t is the discharge time in hours (h).

Question 5

Problem: For a lipo battery

- **Charge = 5000mAh**
- **C rate = 50C**
- **Calculate the maximum drawn current.**

Answer:

$$I_{\max} = 50 * 5000 * 10^{-3} = 250 \text{ Amperes.}$$