

Answer on Question #47052, Physics, Electromagnetism

A battery has emf 13.2V and internal resistance 24m ohms. If the load current is 20.0A, find the terminal voltage of the battery.

Solution

First we can find voltage drop on the internal resistance, since the current is the same as on load resistance. So we find

$$\Delta U = I \cdot R_i = 20 \cdot 0.024 = 0.48 V$$

Now we can find terminal voltage on battery:

$$U_t = U_{emf} - \Delta U = 13.2 - 0.48 = 12.72 V$$