

Lecture 5 - Electrical Energy and Power

$$\Delta Q = I \Delta t$$

$Q \rightarrow$ charge

Change in potential energy = ΔU_{pot}

$\Delta U_{\text{pot}} =$ Final potential energy - Initial potential energy
 $= -\Delta QV$

$$= -IV\Delta t < 0$$

$$\Delta K = IV\Delta t > 0$$

$K \rightarrow$ kinetic energy

Conductor heats up, \therefore amount of energy dissipated as heat during time interval Δt .

$$\Delta W = IV\Delta t$$

$$P = \frac{\Delta W}{\Delta t}$$

$P \rightarrow$ Power

$$P = IV$$

$$P = I^2 R \quad \frac{1}{R} = \frac{V^2}{R}$$