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. ملخص للمادة Pdf للمذكرة والمراجعة
. محاضرات مباشرة علي برنامج زووم
لمناقشة الأجزاء الغير مفهومة
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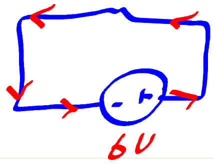

factor G M k — c m M n p a symbol

Question 5: W??

$q = 1.6 \times 10^{-19} C$ 10^{-18} a

How much energy is imparted to an electron as it flows through a 6 V battery from the positive to the negative terminal? Express your answer in attojoules

$\frac{V}{1} = \frac{W}{q} \Rightarrow W = q \cdot V = 1.6 \times 10^{-19} \times 6 = 9.6 \times 10^{-19} J$

$W = \frac{9.6 \times 10^{-19}}{10^{-18}} = 9.6 \times 10^{-1} = 0.96 aJ$

Question 6:

A 1.8-kW electric heater takes 15 min to boil a quantity of water. If this is done once a day and power costs 10 cents/kWh, what is the cost of its operation for 30 days?

$P = 1.8 kW$, $t = \frac{15 \times 30}{60} = 7.5 h$

$C = 10 cent / kW.h$

$W = P \cdot t = 1.8 \times 7.5 = 13.5 kW.h$

$Cost = W \cdot C = 13.5 \times 10 = 135 cent = 1.35 \$$

$W = P \cdot t$ (kW - h)

$Cost = W \cdot C$

Question 7:

A utility company charges 8.2 cents/kWh. If a consumer operates a 60-W light bulb continuously for one day, how much is the consumer charged?

$C = 8.2 cent / kW.h$

$P = 60W = \frac{60}{1000} kW$, $t = 24 h$

$W = Pt = 0.06 \times 24$

$Cost = W \cdot C = 0.06 \times 24 \times 8.2 = 11.808 cents$

Question 8:

A 1.5-kW toaster takes roughly 3.5 minutes to heat four slices of bread. Find the cost of operating the toaster once per day for 1 month (30 days). Assume energy costs 8.2 cents/kWh.

$P = 1.5 kW$, $t = \frac{3.5 \times 30}{60} = 1.75 h$, $C = 8.2 cent / kW.h$

$Cost = W \cdot C = P t C = 1.5 \times 1.75 \times 8.2 = 21.525 cent$

Question 9: $q = 0.8\ Ah,\ t = 10\ h$

A flashlight battery has a rating of 0.8 ampere-hours (Ah) and a lifetime of 10 hours.

(a) How much current (I) can it deliver?

(b) How much power can it give if its terminal voltage is 6 V?

(c) How much energy is stored in the battery in Wh?

(a) $I = \frac{Q}{t} = \frac{0.8}{10} = 0.08\ A = 80\ mA$

(b) $P = VI = 6 \times 0.08 = 0.48\ W = 480\ mW$

(c) $W = Pt = 0.48 \times 10 = 4.8\ W.h$