Answer on Question #46030– Physics – Electromagnetism

Electrical energy is sold by PHCN in units of kilowatt-hour (kWh). The lighting of a house is done with five 60 W bulbs, which are switched on for approximately three hours per day. What is the lighting bill for the household over a period of 30 days at the rate of N = 1.20 per kilowatt-hour?

Solution

Power used by one bulb expressed in kilowatts is

$$P = 0.06\,kW.$$

Therefore the total energy used by 5 bulbs that are switched on for 3 hours per day is

$$E = n_{bulbs} \cdot P \cdot t = 5 \cdot 0.06 \cdot 3 = 0.9\,kWh\,.$$

Thus the lighting bill for the household over a period of 30 days expressed in dollars is

$$Money = Rate \cdot Days \cdot E = 1.2 \cdot 30 \cdot 0.9 = 32.4\,\$.$$

Answer: $\mathbf{32.4}\,\$$.