Answer on Question 59057, Physics, Electric Circuits

Question:

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 swithed 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 $N1.20$ per kilowatt-hour?

a) $N1.50$

b) $N25.30$

c) $N32.40$

d) $N52.20$

Solution:

Let's first calculate the total energy used by 5 bulbs which are switched on for approximately three hours per day:

$$E = nPt,$$

here, n is the number of bulbs, $P = 0.06\ kW$ is the power used by the one bulb, t is the time.

Let's substitute the numbers:

$$E = nPt = 5 \cdot 0.06\ kW \cdot 3\ \frac{h}{day} = 0.9\ \frac{kWh}{day}.$$

Finally, we can calculate the lighting bill for the household over a period of 30 days at the rate of $N1.20$ per kilowatt-hour:

$$Lightning\ Bill = Rate \cdot Days \cdot E = N1.20\ \frac{\$}{kWh} \cdot 30\ days \cdot 0.9\ \frac{kWh}{day} = N32.40.$$

Answer:

c) $N32.40$