

LAMC Physical Science 1 Homework #6

This homework is due on 11/05

Ch 8

Matching

c. 12 electric power

d.4 law of charges

l. 5 Coulomb's law

o. 7 Current

Multiple Choice

1. d

2. c

4. b

7. a

10.

$$I = 0.50 \text{ A}$$

$$R = 20 \Omega$$

$$V = ??$$

$$V = IR$$

$$= 10 \text{ V}$$

12.

$$V = 3.0 \text{ V}$$

$$P = 0.50 \text{ W}$$

$$I = ??$$

$$P = VI$$

$$I = \frac{P}{V}$$

$$= \frac{0.50 \text{ W}}{3.0 \text{ V}}$$

$$(a) \quad = 0.17 \text{ A}$$

$$V = 3.0 \text{ V}$$

$$I = 0.17 \text{ A}$$

$$R = ??$$

$$R = \frac{V}{I}$$

$$= \frac{3.0 \text{ V}}{0.17 \text{ A}}$$

(b)

$$= 18 \Omega$$

14.

$$P = 1000W$$

$$\text{time} = \frac{1}{8} \text{ of day}$$

$$= 3 \text{ hrs/day} \times \frac{30 \text{ days}}{1 \text{ month}}$$

$$= 90 \text{ hrs/month}$$

$$\text{cost} = \$0.10/\text{kWh}$$

$$W = P \cdot t$$

$$= 1000W \times 90 \text{ hrs/month}$$

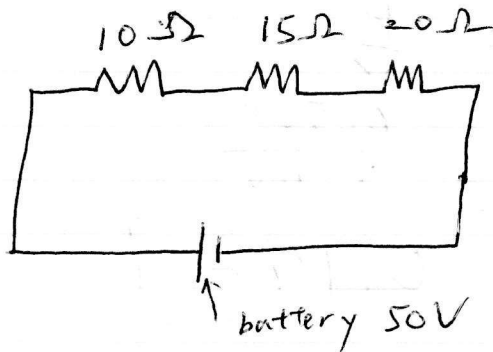
$$= 90000 \text{ Wh/month}$$

$$= 90 \text{ kWh/month}$$

$$\text{Total Money} = 90 \text{ kWh/month} \times \$0.10/\text{kWh}$$

$$= \boxed{\$9/\text{month}}$$

21.



(a)

$$V = 50V$$

$$R_{\text{total}} = R_1 + R_2 + R_3$$

$$= 45\Omega$$

$$I = ??$$

$$I = \frac{V}{R}$$

$$= \frac{50V}{45\Omega}$$

$$= \boxed{1.1A}$$

(b)

$$V = 50V$$

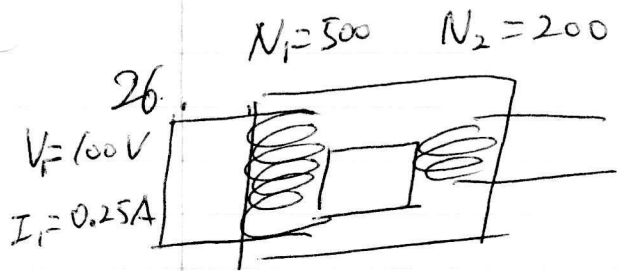
$$I = 1.1A$$

$$P = ??$$

$$P = VI$$

$$= 50V \times 1.1A$$

$$= \boxed{55W}$$



(a) Since $N_1 > N_2$, it is a step-down transformer

(b)

$$N_1 = 500 \text{ turns}$$

$$N_2 = 200 \text{ turns}$$

$$V_1 = 100 \text{ V}$$

$$I_1 = 0.25 \text{ A}$$

$$V_2 = ??$$

$$I_2 = ??$$

$$\frac{V_1}{N_1} = \frac{V_2}{N_2}$$

$$V_2 = \frac{N_2}{N_1} V_1$$

$$= \frac{200 \text{ turns}}{500 \text{ turns}} \times 100 \text{ V}$$

$$= 40 \text{ V}$$

$$P_1 = P_2$$

$$V_1 I_1 = V_2 I_2$$

$$I_2 = \frac{V_1 I_1}{V_2}$$

$$= \frac{100\text{ V} \times 0.25\text{ A}}{40\text{ V}}$$

$$= 0.625 \text{ A}$$