

EASTERN MEDITERRANEAN UNIVERSITY

DEPARTMENT OF ELECTRICAL AND ELECTRONIC  
ENGINEERING

EENG223

CIRCUIT THEORY I

EXPERIMENT 4

POWER

Student Name & Student Number

1.....

2.....

3.....

**Object:** To investigate the concept of electrical power and power transfer.

- Construct the circuit in Fig. 4.1 and measure I and fill Table 4.1. Then calculate power.

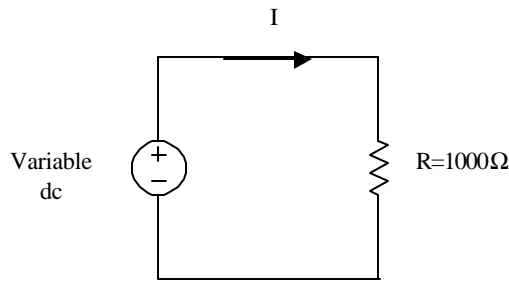


Fig. 4.1

**Table 4.1**

| Voltage (v) | Current (mA) | Power=VI (mW) |
|-------------|--------------|---------------|
| 0           |              |               |
| 2           |              |               |
| 4           |              |               |
| 6           |              |               |
| 8           |              |               |
| 10          |              |               |

- Construct the circuit in Fig. 4.2 and measure I and fill Table 4.2. Then calculate power.

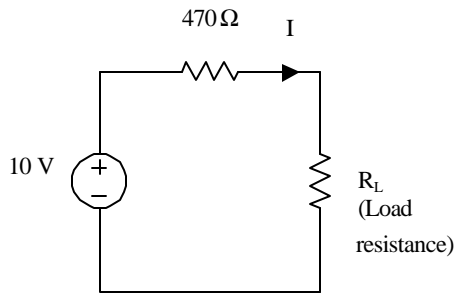


Fig. 4.2

**Table 4.2**

| Load Resistance $R_L$ (Ω) | Current I (mA) | Power $I^2 R_L$ (mW) |
|---------------------------|----------------|----------------------|
| 100                       |                |                      |
| 220                       |                |                      |
| 390                       |                |                      |
| 470                       |                |                      |
| 680                       |                |                      |
| 820                       |                |                      |
| 1k                        |                |                      |

**Questions:**

1. Draw graphs as shown in Fig. 4.3 of voltage against current, and voltage against power using the same axes with different scales as shown from the results of Table 4.1 at page 3.
2. From your results obtained can you deduce the law of the curve for power against voltage?
3. If you double the applied voltage from 2 V to 4 V, how many times does the power increase?

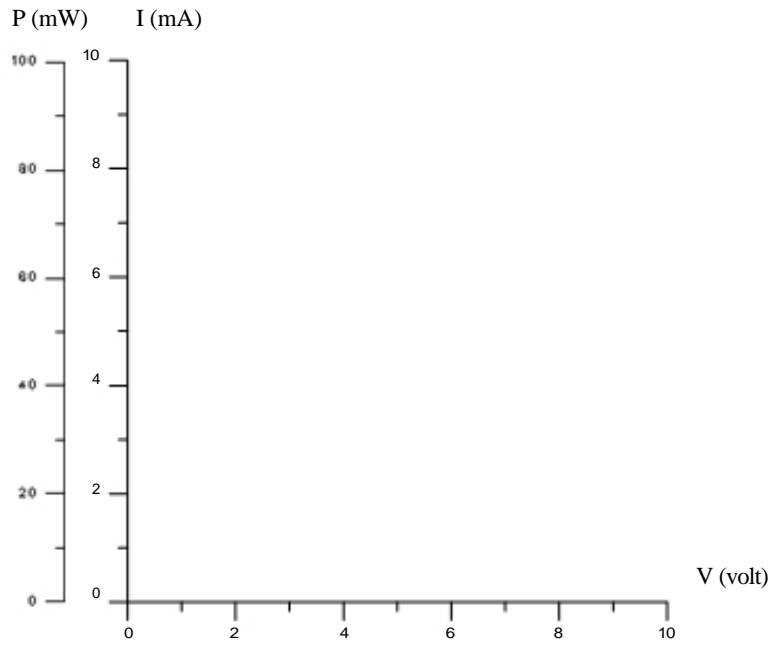


Fig. 4.3.

4. If you double the applied voltage from 4 V to 8 V, does the power increase by the same factor as it did from 2 V to 4 V ?
5. If you triple the applied voltage, how many times does the power increase ?
6. What relationship is there between the power and the current flowing ?
7. Plot Fig. 4.4 for power against  $R_L$  by using data from Table 4.2.

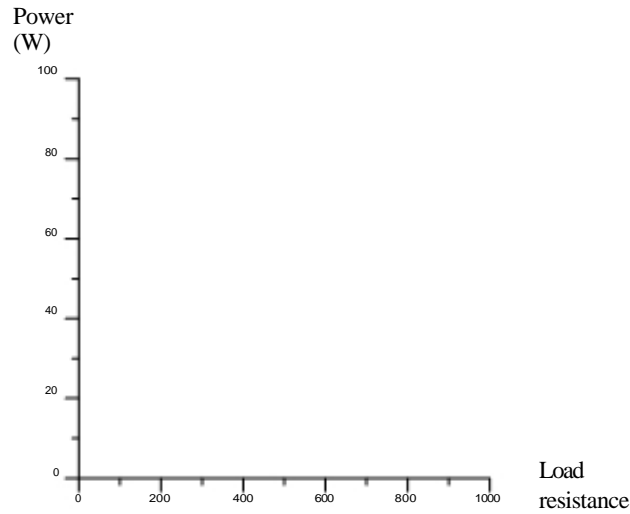


Fig. 4.4.

8. What is the power dissipated in  $R_L$  at  $R_L = 470 \Omega$ ?