Mohamed BOUDIAF university-Msila

Faculty of technology | **Electronics department**

Option ; ELN; TLC & Aut | **Year of Study L2**

Exercise Series 1

Exo1

1-Find the conductance of a conductor of resistance: (a) 10Ω (b) 5 k Ω (c) 100 MΩ.

2-An electric heater consumes 1.8 MJ when connected to a 250 V supply for 30 minutes. Find the power rating of the heater and the current taken from the supply.

EXO2:

Further problems on e.m.f. resistance, conductance, power and energy

1 Find the conductance of a resistor of resistance (a) 10Ω (b) 2 kΩ (c) 2 mΩ

[(a) 0.1 S (b) 0.5 mS (c) 500 S]

2 A conductor has a conductance of 50μS. What is its resistance? [20 k]

3 An e.m.f. of 250 V is connected across a resistance and the current flowing through the resistance is 4 A. What is the power developed? [1 kW]

4 450 J of energy are converted into heat in 1 minute. What power is dissipated? [7.5 W]

5 A current of 10 A flows through a conductor and 10 W is dissipated. What p.d. exists across the ends of the conductor? [1 V]

6 A battery of e.m.f. 12 V supplies a current of 5 A for 2 minutes. How much energy is supplied in this time? [7.2 kJ]

7 A d.c. electric motor consumes 36 MJ when connected to a 250 V supply for 1 hour. Find the power rating of the motor and the current taken from the supply. [10 kW, 40 A]

EXO3

1-The current flowing through a resistor is 0.8 A when a p.d. of 20 V is applied. Determine the value of the resistance.

2-Determine the p.d. which must be applied to a 2kΩ resistor in order that a current of 10 mA may flow.

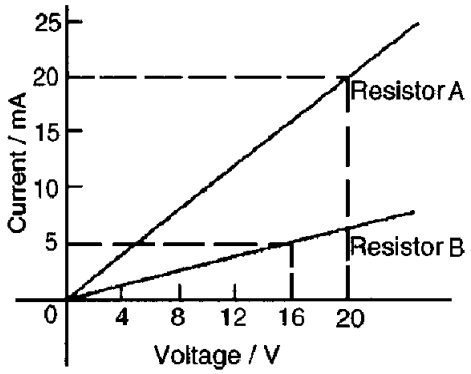
3-A coil has a current of 50 mA flowing through it when the applied voltage is 12 V. What is the resistance of the coil?

4-A 100 V battery is connected across a resistor and causes a current of 5 mA to flow. Determine the resistance of the resistor. If the voltage is now reduced to 25 V, what will be the new value of the current flowing?

5-A 100 V battery is connected across a resistor and causes a current of 5 mA to flow. Determine the resistance of the resistor. If the voltage is now reduced to 25 V, what will be the new value of the current flowing?

6-What is the resistance of a coil which draws a current of (a) 50 mA and (b) 200μA from a 120 V supply?

7-The current/voltage relationship for two resistors A and B is as shown in Figure below Determine the value of the resistance of each resistor.



8-Calculate the power dissipated when a current of 4 mA flows through a resistance of 5 kΩ

ExO4

A cell has an internal resistance of 0.02Ω and an e.m.f. of 2.0 V. Calculate its terminal p.d. if it delivers (a) 5 A (b) 50 A.