مدرسة صقر الإمارات الدولية الخاصة

EMIRATES FALCON INT'L. PRIVATE SCHOOL

Physics - Grade 12

Revision Sheet for the Final Exam / Second Term
Academic Year: 2018/2019

Student's Name: ……. **Date: /3/2018**

Required Material: **Chapter 18: Sections 1,2 & 3 (Textbook Pages: 628 - 661)**

Chapter 19: Sections 1 & 2 (Textbook Pages: 664 - 672)

- **Please notice dear student that all revision and work sheets that have been given for you during this term are very important and you need to study them also.**

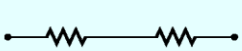
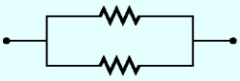
Chapter 18 - Section 1 : Schematic Diagrams and Circuits

Key Terms: schematic diagram, electric circuit, load, short circuit, electromotive force, terminal voltage

Chapter 18 - Section 2 : Resistors in Series or in Parallel

Key Terms: series, parallel

Table 2 Resistors in Series or in Parallel

	Series	Parallel
schematic diagram		
current	$I = I_1 = I_2 = I_3 \ldots$ = same for each resistor	$I = I_1 + I_2 + I_3 \ldots$ = sum of currents
potential difference	$\Delta V = \Delta V_1 + \Delta V_2 + \Delta V_3 \ldots$ = sum of potential differences	$\Delta V = \Delta V_1 = \Delta V_2 = \Delta V_3 \ldots$ = same for each resistor
equivalent resistance	$R_{eq} = R_1 + R_2 + R_3 \ldots$ = sum of individual resistances	$\frac{1}{R_{eq}} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} \ldots$ = reciprocal sum of resistances

RESISTANCE

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

$$\text{resistance} = \frac{\text{potential difference}}{\text{current}}$$

1. Three resistors with values of 9.0 Ω, 6.0 Ω, and 12.0 Ω, are connected in series with 9.0 V battery.

a. Calculate the equivalent resistance.

b. Calculate the current in the circuit.

c. What is the current in each resistor?

d. What is the potential difference across each resistor?

2. Three resistors with values of 2.0 Ω, 8.0 Ω,and 5.0 Ω, are connected in parallel with 12.0V battery.

a. Calculate the equivalent resistance of the circuit.

b. What is the potential difference across each resistor?

c. Calculate the current in the circuit.

d. What is the current in each resistor?

3. An 18.0 Ω resistor is connected in series with another resistor across a 1.55 V battery. The current in the circuit is 25 mA. Calculate the value of the unknown resistance.

4. A 42.0 Ω resistor is connected in parallel with another resistor across a 9.0 V battery. The current in the circuit is 0.41 A. Calculate the value of the unknown resistance.

Chapter 18 - Section 3: Complex Resistor Combinations

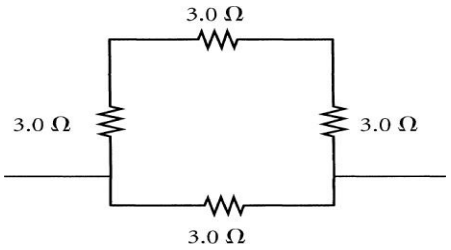
Key Terms: complex circuit, circuit breaker, fuse

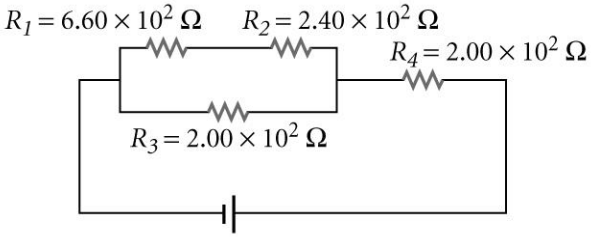
- How to find the equivalent resistance of a complex circuit?

1. Reduce the circuit to smaller groups of series or parallel combinations.
2. Calculate the equivalent resistance of the groups.
3. Finally calculate the equivalent resistance of the entire circuit.

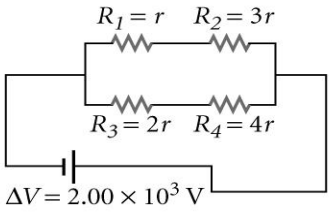
- There is no rule as to where to start or the order of the steps to take.

1. What is the equivalent resistance for the resistors in each figure shown below.

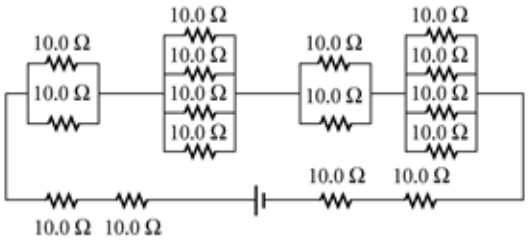




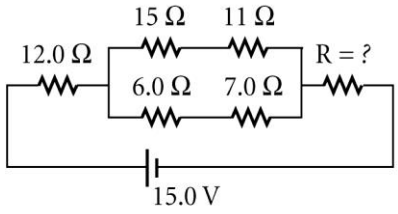
2. If the total current produced in the circuit shown below is 1.0×10^{-8} A, , find the value of the equivalent resistance and the value of *r*.



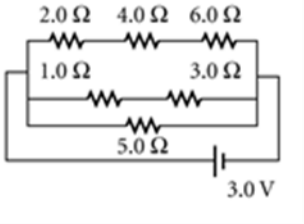
3. What will be the net current for the circuit shown below?



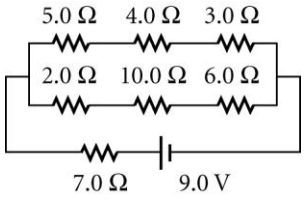
4. Determine the unknown resistance in the complex circuit shown at right. The current in the circuit is 680 mA.



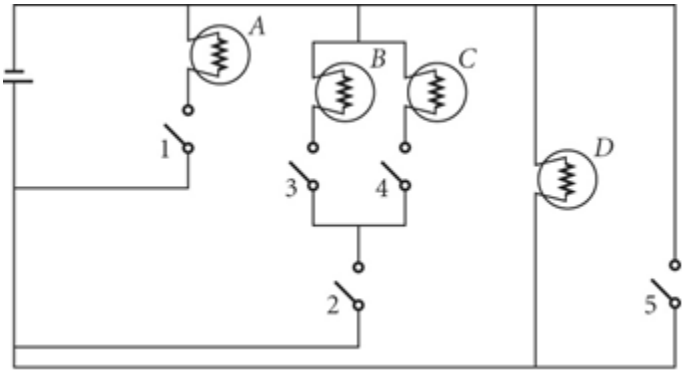
5. Determine the current in and the potential difference across the 9.0 Ω resistor in the circuit diagram below.



6. Determine the current in and the potential difference across the 10.0 Ω resistor in the circuit diagram at right.



7. Consider the circuit shown below.



a.Do any of the bulbs have a complete circuit when all the switches are open? Which one(s)?

b.Do any of the switches cause a short circuit when closed? Which one(s)?_____

c.Which switches should be kept open, and which should be closed for the following to occur?

- only bulbs A and B are off _____
- only bulbs A and C are off _____
- only bulbs B and C are off _____

8. A light bulb of unknown resistance is connected in series with a 9.0 Ω resistor to a 12.0 V battery. The current in the bulb is 0.80 A.

a.In the space below, sketch a schematic diagram of the circuit.

b.Find the equivalent resistance of the circuit.

c.Find the resistance of the light bulb.

9. A light bulb of unknown resistance is connected in parallel to a 48.0 Ω resistor and to a 12.0 V battery. The current through the battery is 2.50 A.

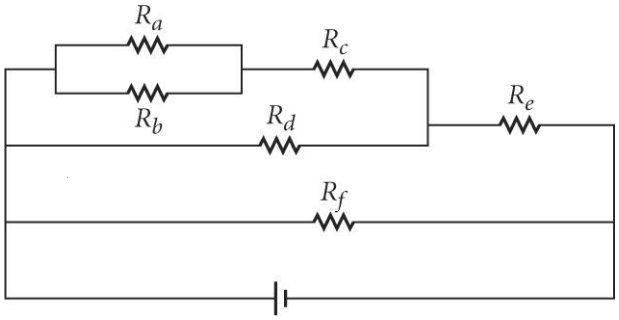
a. In the space below, sketch a schematic diagram of the circuit.

b. Find the potential difference across the resistor and across the bulb.

c. Find the current in the resistor and in the bulb.

d. Find the resistance of the light bulb.

10. In the circuit below, find the equivalent resistance for the following situations.



a. $R_a = R_b = R_c = R_d = R_e = R_f = 10.0\ \Omega$

b. $R_a = 10.0\ \Omega$; $R_b = 20.0\ \Omega$; $R_c = 30.0\ \Omega$; $R_d = 40.0\ \Omega$; $R_e = 50.0\ \Omega$; $R_f = 60.0\ \Omega$

Chapter 19 - Section 1: Magnets and Magnetic Fields

Key Terms: Magnet, Pole, Magnetic domain, Magnetic field, Magnetic flux.

1. Why do magnetic poles always occur in pairs?

_____

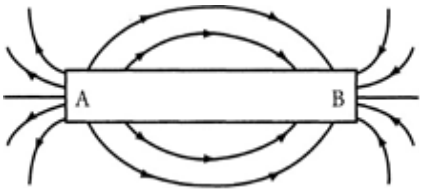
_____

2. How can magnetic field lines be drawn with the aid of compass?

_____

_____

3. The magnetic field of a bar magnet is shown in the figure to the right. Is the magnet's north pole at A or B? Explain.



_____

4. List the properties of magnetic field lines.

1. _____

2. _____

3. _____

4. _____

5. The north pole of a magnet is attracted to the geographic North Pole of Earth, yet like poles repel. Explain this.

_____

_____

Chapter 19 - Section 2: Magnetism from Electricity

Key Terms: Magnetism, Solenoid, The Right-Hand Rule.

1. Compare the magnetic field produced by a current in a straight conductor and in a solenoid.

Straight conductor	Solenoid