WORKSHEET 1

CHAPTER 12 – ELECTRICITY

A. Tick (✓) the correct option.

1. Which of the following is not a primary cell?
   a. Lead storage cell
   b. Voltatic cell
   c. Daniel cell
   d. Dry cell
2. Among which of the following resistance does not depend?
   a. Length of conductor
   b. Area of cross section
   c. Density
   d. Temperature
3. In dry cell, positive electrode is
   a. zinc.
   b. carbon.
   c. manganese dioxide.
   d. copper.
4. The rheostat is used in the circuit to
   a. increase the magnitude of current only.
   b. decrease the magnitude of current only.
   c. increase or decrease the magnitude of current.
   d. none of these.
5. The SI unit of resistance is
   a. joule.
   b. volt.
   c. ohm.
   d. ampere.

B. Fill in the blanks.

1. An _____ is an apparatus which is used to produce electric current from spontaneous chemical reactions.
2. _____ is always connected in parallel with the resistor.
3. A continuous and closed path along which an electric current flows is called an _____
4. Those substances which have comparatively higher electrical resistivity are called _____
5. The property of a conductor by virtue of which it opposes the flow of electric current through it is called its _____

C. State whether the following statements are true or false.

1. Once the chemicals used in a primary cell are consumed, the cell gets discharged.
2. LED lighting is energy efficient up to 100%.
3. Primary cell can recharged easily.
4. The current is inversely proportional to the resistance, if the resistance is doubled, the current gets halved.
5. As current flows through a conductor, the free electrons lose energy which is converted into heat.

Name: ..... Teacher's signature: .....

Class: IX Date: .....

D. Match the following.

1.	Cell	for detecting current
2.	Resistance	for measuring current
3.	Ammeter	for measuring the potential difference
4.	Voltmeter	obstruct the flow of current
5.	Galvanometer	source of current

E. Answer the following questions.

Very short answer questions

1. How much work is done in moving 5 C across two points having potential difference 8 V?
2. The manufacturer specifies that a certain lamp will allow 0.8 ampere of current when 120 volts is applied to it. What is the resistance of the lamp?

Short answer questions

1. What are the factors on which the resistance of a conductor depends?
2. What is a secondary cell? Name two such type of cells.

Long answer questions

1. Briefly explain Ohm's law.
2. How can we contribute to save electricity?

ANSWERS

WORKSHEET 1

A. Tick (✓) the correct option.

1. a 2. c 3. b 4. c 5. c

B. Fill in the blanks.

1. electrochemical cell
2. voltmeter
3. electric circuit
4. resistors
5. resistance

C. State whether the following statements are true or false.

1. T 2. F 3. F 4. T 5. T

D. Match the following.

1.	Cell	source of current
2.	Resistance	obstruct the flow of current
3.	Ammeter	for measuring current
4.	Voltmeter	for measuring the potential difference
5.	Galvanometer	for detecting current

E. Answer the following questions.

Very short answer questions

1. $W = V \times Q = 8\ \text{V} \times 5\ \text{C} = 40\ \text{J}$
2. $V = I \times R$

So, $R = \frac{V}{I} = \frac{120\ \text{V}}{0.8\ \text{A}} = 150\ \text{W}$

Short answer questions

1. The electrical resistance of a conductor (or a wire) depends on the following factors:
   i. length of the conductor
   ii. area of cross section of the conductor (or thickness of the conductor)
   iii. temperature of the conductor
   iv. nature of the material of the conductor
2. Secondary cells are the cells which provide current as a result of reversible chemical reaction and they can be recharged after use. For example, Lead accumulator, Ni-Fe accumulator.

Long answer questions

1. In 1827, a German physicist Georg Simon Ohm by his experiments established a relationship between electric current (I) and potential difference (V) in an electrical circuit. This relationship is known as **Ohm's law**.

   According to Ohm's law, 'The electric current (I) flowing through a conductor is directly proportional to the potential difference (V) across its ends, provided the physical conditions (like temperature, pressure, etc.) do not change,' that is

   $I \propto V$ [At constant physical conditions like temperature and pressure, etc.]

   or $V \propto I$

   This can also be written as

   $V = R \times I$

   where R is a constant called **resistance of the conductor**. The value of this constant (resistance) depends on the nature, length, temperature and area of cross section of the conductor.

   The above equation can also be written as:

   $R = \frac{V}{I}$ where R = Resistance
   I = Current
   V = Potential difference

   So, we find that the ratio of potential difference applied between the ends of a conductor and the current flowing through it is a constant quantity called resistance.

   So, Current, $I = \frac{V}{R}$

2. We can contribute to save electricity in the following ways:
   i. Switch off all fans and lights when not required.
   ii. Don't leave electrical appliances like computers, television, stereo, etc. on standby mode.
   iii. Ensure all electrical appliances are used as per their requirements.
   iv. Light-emitting diodes (LEDs) help to save more electricity as compared to bulbs and fluorescent lights.
   v. We should use electrical appliances with higher star ratings.
   vi. We should use public transport and car pools.