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Electricity class 10 ncert

Here's an overview of NCERT solutions for class 10 science chapter 12 electricity which covers various topics and subtopics. These include electric current and circuits, electric potential and potential difference, circuit diagrams, Ohm’s law, factors affecting resistance, and the heating effect of electric current. Electricity solutions will not only aid in board exam preparation but also help with competitive exams like Engineering. The list of topics under electricity class 10 NCERT solutions includes electric current, electric circuits, electric potential, circuit diagrams, ohms law, and more. NCERT solutions for Class 10 Science Chapter 12 Electricity PDF is available for free download in both Hindi and English medium for students from various boards such as CBSE, Uttarakhand, Bihar, MP Board, Gujarat Board, and UP Board. The NCERT Solutions provided cover questions from the textbook including intext questions with answers. For instance, question one asks what an electric circuit means to which the answer is a continuous path where electric current flows. Other questions include defining the unit of current, calculating the number of electrons constituting one coulomb of charge, and more. Additionally, solutions for other topics such as resistance, potential difference, and energy are also included in the NCERT Solutions For Class 10 Science Chapter 12 Electricity. will flow more easily through a thick wire than a thin wire of the same material. As the cross-sectional area of a conductor increases, it becomes easier for electrons to move through it, resulting in lower resistance. Therefore, if the potential difference across an electrical component remains constant while its value is halved, the current flowing through it will also decrease to half of its initial value. Coils in electric toasters and irons are made from alloys rather than pure metals because alloys have a higher resistivity and do not oxidize easily even at high temperatures. This makes them suitable for use in heating devices. According to Table 12.2, iron has a lower resistivity (10.0 x 10^-8 Ω m) compared to mercury (94.0 x 10^-8 Ω m), making it a better conductor. Silver has the lowest resistivity (1.60 x 10^-8 Ω m), making it the best conductor. A circuit diagram consisting of three cells, each with a voltage of 2V, a 5Ω resistor, an 8Ω resistor, and a 12Ω resistor connected in series can be drawn as follows: Adding an ammeter to measure current through resistors and a voltmeter to measure potential difference across the 12Ω resistor would result in the following readings: total voltage V = 6V, total resistance R = 25Ω. When three resistances (1Ω, 10^6Ω, or 1Ω, 10^3Ω, and 10^6Ω) are connected in parallel, their equivalent resistance is smaller than the smallest individual resistance. In a scenario where an electric lamp with a resistance of 100Ω, a toaster with a resistance of 50Ω, and a water filter with a resistance of 500Ω are connected to a 220V source in parallel, if an electric iron takes as much current as these three appliances, the resistance of the electric iron would be equivalent to the combined resistance of these three appliances. The current flowing through it can be calculated based on this equivalent resistance. Question 3: Advantages of connecting electrical devices in parallel with the battery include: if one appliance stops working, others continue to function normally; each appliance has its own switch and can be turned on or off independently without affecting others; all appliances receive the same voltage (220 V) as the power supply line; and the overall resistance of the household circuit is reduced, increasing current from the power supply. Question 4: To achieve a total resistance of (i) 4 Ω, connect the 2Ω resistor in series with the parallel combination of 3Ω and 6Ω resistors. To achieve a total resistance of (ii) 1 Ω, connect resistors of 2 Ω, 3 Ω, and 6 Ω in parallel. Question 5: The highest total resistance can be obtained by connecting the four coils in series, resulting in R = 4Ω + 8Ω + 12Ω + 24Ω = 48Ω. The lowest total resistance can be achieved by connecting the four coils in parallel. Page Number: 218 Question 1: The cord of an electric heater does not glow while the heating element does because the cord made of copper has extremely low resistance, producing negligible heat when current passes through it. **Questions** 1. When connecting two parts in parallel, what is the ratio R/R' if the equivalent resistance is R'? (Answer: 25) 2. Which term does not represent electrical power in a circuit? (Answer: IR2) 3. If an electric bulb is rated for 220V and 100W, but operates on 110V, how much power will it consume? (Answer: 25W) 4. Two wires of the same material and length are connected in series then parallel across the same potential difference. What is the ratio of heat produced in these combinations? (Answer: 1:4) 5. How do you connect a voltmeter to measure the potential difference between two points? (Answer: In parallel) 6. A copper wire has a diameter of 0.5mm and resistivity of 1.6 x 10^-8 Ωm. What is the length required for a resistance of 10Ω, and how would doubling the diameter affect the resistance? 7. Plot a graph between voltage and current to find the resistance of a given resistor. 8. A 12V battery connected to an unknown resistor produces a current of 2.5mA. What is the value of the resistance? 9. A 9V battery is connected in series with five resistors (0.2Ω, 0.3Ω, 0.4Ω, 0.5Ω, and 12Ω). How much current would flow through the 12Ω resistor? 10. To carry a current of 5A on a 220V line using resistors with a resistance of 176Ω each, how many are needed in parallel? 11. Show how to connect three 6Ω resistors to achieve a combination with a resistance of (i) 9Ω and (ii) 4Ω. Let me know if you'd like me to clarify any specific questions or concepts! The text discusses various topics related to electric circuits, including resistance, power consumption, and heating devices. 1. A series connection of resistors R1, R2, and R3 with equal values results in an equivalent resistance. 2. The equivalent resistance for different configurations is provided as a solution. 3. Electric bulbs rated 10 W are connected in parallel across the two wires of a 220 V supply line, with a maximum allowable current of 5 A. The number of lamps that can be connected is calculated to be 110. 4. Two resistors (24 Ω) are used separately, in series, and in parallel, resulting in different currents in each case. 5. The power used in a 2 Ω resistor is compared between two circuits: one with a 6 V battery and two 1 Ω and 2 Ω resistors, and another with a 4 V battery and two 12 Ω and 2 Ω resistors. 6. Two lamps (100 W and 60 W) are connected in parallel to an electric mains supply, resulting in a specific current drawn from the line. 7. The energy usage of a 250 W TV set and a 1200 W toaster is compared over a certain time period. 8. An electric heater with resistance 8 Ω draws 15 A from the service mains for 2 hours, resulting in a calculated power consumption. Additionally, several questions are posed, including: * Why tungsten is used almost exclusively for filament of electric lamps * Why conductors of electric heating devices are made of an alloy rather than a pure metal * Why series arrangement is not used for domestic circuits * How resistance of a wire varies with its area of cross-section * Why copper and aluminum wires are usually employed for electricity transmission (i) Tungsten filament in electric lamps has a high melting point, allowing it to withstand temperatures up to 2700°C without melting. This enables it to produce both heat and light energy. (ii) Conductors in electric heating devices like bread-toasters and irons are made from alloys rather than pure metals due to their higher resistivity and resistance to oxidation at high temperatures. (iii) Series arrangements are not typically used for domestic circuits because if one appliance fails, the entire circuit is disrupted, affecting all other appliances connected. (iv) The resistance of a wire inversely proportional to its cross-sectional area. As the area increases, the resistance decreases due to increased free electrons allowing for easier movement. (v) Copper and aluminum wires are often employed in electricity transmission due to their low resistances, which prevent excessive heat generation upon electric current passage. A continuous path made up of conducting wires is defined as an electric circuit, comprising components such as cells, ammeters, voltmeters, and plugs. The SI unit for electric current is the ampere (A), representing one coulomb per second. The relationship between the resistance of wires is crucial in understanding electricity. Thick wires have a lower resistance compared to thin ones due to the fact that resistance is directly proportional to the inverse of the wire's cross-sectional area (R ∝ 1/A). This principle highlights the importance of wire thickness in determining its resistance. A key concept in electricity is Ohm's law, which states that current through an electrical component decreases when the potential difference across it halves. In such a scenario, the current becomes half of its previous value. Electric appliances like toasters and irons rely on coils made from alloys rather than pure metals. This preference stems from two reasons: alloys have higher resistivity than pure metals and possess high melting points that prevent oxidation. When comparing conductors, iron exhibits lower resistivity compared to mercury, making it a better conductor. Among various materials, silver stands out as the best conductor due to its minimal resistivity. A circuit consisting of three 2V cells, resistors (5 Ω, 8 Ω, and 12 Ω), and a plug key connected in series can be represented by a schematic diagram. To measure current through specific resistors and voltage across others, ammeters and voltmeters are inserted into the circuit. By calculating total resistance using R = R1 + R2 + R3, we find that it equals 25 Ω. When components are connected in parallel, their equivalent resistance decreases. For instance, connecting a 1 Ω resistor with a 106 Ω resistor yields an equivalent resistance less than 1 Ω. An electric lamp (100 Ω), toaster (50 Ω), and water filter (500 Ω) connected in parallel to a 220 V source are considered for calculating the current that flows through each appliance. The resistance of an iron connected to the same source, which takes as much current as all three appliances combined, is determined using Ohm's law. The advantages of connecting electrical devices in parallel with a battery include: (i) uniform potential difference across each device, and (ii) accommodating different resistances and currents required by various appliances. Moreover, if one appliance fails to work, the others continue functioning properly due to the shared current flow. Three resistors (2 Ω, 3 Ω, and 6 Ω) can be connected in series or parallel to achieve a specific total resistance value. However, combining them in parallel yields an equivalent resistance less than that of any individual resistor. In conclusion, understanding electrical principles such as resistance, Ohm's law, and the advantages of parallel connections is essential for designing efficient and safe electrical circuits. to achieve a total resistance of (a) 4 Ω or (b) 1 Ω. To get 4 Ω, you should connect 2 Ω in series with the parallel combination of 3 Ω and 6 Ω. What is the highest (b) lowest total resistance that can be secured by combining four coils of resistances 4 Ω, 8 Ω, 12 Ω, and 24 Ω? The highest resistance is obtained when all four coils are connected in series. Rs = 4 Ω + 8 Ω + 12 Ω + 24 Ω = 48 Ω. The lowest resistance is secured by combining all four coils in parallel. Page 218 Question 1: Why doesn't the cord of an electric heater glow while the heating element does? Answer: The cord is made up of metallic wire with low resistance, whereas the heating element has more resistance than its constituent metals. Heat produced ‘H’ is H = I2Rt. For the same current, H ∝ R, so for higher resistance, more heat is produced by the heating element, causing it to glow. Question 2: Calculate the heat generated while transferring 96000 C of charge in one hour through a potential difference of 50 V. Answer: Question 3: An electric iron with a resistance of 20 Ω takes a current of 5 A. Calculate the heat developed in 30 s. Answer: Given R = 20 Ω, I = 5 A, t = 30 s; H = I2Rt = (5)2 x 20 x 30 = 15000 J = 1.5 x 10^4 J Page 220 Question 1: What determines the rate at which energy is delivered by a current? Answer: Electric power determines the rate at which energy is delivered by a current. Question 2: An electric motor takes 5 A from a 220 V line. Determine the power of the motor and the energy consumed in 2 h. Answer: Given I = 5 A, V = 220 V, t = 2 h; Power, p = VI = 220 x 5 = 1100 W; Energy consumed = Vlt = Pt = 1100 x 2 = 2200 Wh Textbook Questions Question 1: A piece of wire with a resistance R is cut into five equal parts. These parts are then connected in parallel. If the equivalent resistance of this combination is R', then what is the ratio R/R'? Answer: Question 2: Which of the following terms does not represent electrical power in a circuit? (a) I2R, (b) IR2, (c) VI, or (d) V2/R. Answer: (b) Question 3: An electric bulb rated 220 V and 100 W is operated on 110 V. The power consumed will be (a) 100 W, (b) 75 W, (c) 50 W, or (d) 25 W. Answer: Question 4: Two conducting wires of the same material and equal lengths and diameters are first connected in series and then parallel in a circuit across the same potential difference. The ratio of heat produced in series and parallel combinations would be (a) 1:2, (b) 2:1, (c) 1:4, or (d) 4:1. Answer: Question 5: How is a voltmeter connected in a circuit to measure the potential difference between two points? Answer: A voltmeter is connected in parallel across any two points in a circuit to measure the potential difference between them with its +ve terminal to the point at higher potential and -ve terminal to the point at lower potential of the source. Question 6: A copper wire has a diameter of 0.5 mm and resistivity of 1.6 x 10^-8 Ωm. What will be the length of this wire to make its resistance 10 Ω? How much does the resistance change if the diameter is doubled? Answer: Question 7: Given text rewritten as follows: When the current flowing in a resistor is known, the corresponding values of potential difference V across it can be calculated. To solve this, plot a graph between V and I for different resistor values. - For Question 8: When a 12 V battery is connected to an unknown resistor, there's a current of 2.5 mA in the circuit. Calculate the resistance of that resistor. - For Question 9: A 9 V battery is connected in series with resistors of 0.2 Ω, 0.3 Ω, 0.4 Ω, 0.5 Ω and 12 Ω. The current flowing through the 12 Ω resistor can be calculated. - For Question 10: To carry a certain power on a line, how many resistors (in parallel) are needed? - For Question 11: Three resistors with a resistance of 6 Ω each need to be connected in two ways: i. The combination has a resistance of 9 Ω. ii. The combination has a resistance of 4 Ω. - For Question 12: Several electric lamps rated 10 W can be connected in parallel with each other across the wires of an electric supply line if the maximum allowable current is 5 A. - For Question 13: An oven's hot plate has two resistance coils that may be used separately, in series, or in parallel. Calculate the currents for these three cases. - For Question 14: Compare the power used in a circuit with a 2 Ω resistor using different configurations (series and parallel). - For Question 15: Two lamps of different ratings are connected in parallel to an electric mains supply. Calculate the current drawn from the line if the supply voltage is 220 V. - For Question 16: Compare the energy consumed by a TV set and a toaster over specified timings. - For Question 17: An electric heater draws 15 A for 2 hours. Calculate the rate at which heat is developed in the heater. - For Question 18: Explain several concepts related to electric heating devices such as tungsten, conductor materials (alloys), series arrangements, wire resistance and cross-section area, and wire selection for electricity transmission. 1. The potential across a resistor in series arrangement varies due to differences in resistance values among appliances. 2. Individual operation of appliances is not possible as they must be connected in series. 3. Resistance (R) is directly proportional to the area of cross-section of a conductor (A), represented by the equation R ∝ 1/A. 4. Conductors have high electrical conductivity, which can lead to excessive heat generation and melting if not handled properly. Given text content here Given article text here The resistance of a resistor is measured using an ammeter and voltmeter. The value of the resistance is calculated as V/I, where V is the voltage across the resistor and I is the current flowing through it. In this experiment, reading from the ammeter is 180 mA, and reading from the voltmeter is 1.8 V. Electricity Basics The matter on which electricity produces electric and magnetic effects resides on the outer surface of a conductor. Q = ne Coulomb (C) Electric Current (I) I = \(\frac{Q}{t}\) Ampere (A) Types of Current Direct Current: Constant magnitude and direction Alternating Current: Magnitude and direction periodically change with time Electric Potential V = \(\frac{W}{Q}\) Volt Ohm's Law: If conditions remain the same, I ∝ V => V = IR Resistance R ∝ l ∝ \(\frac{1}{A}\) R = \(\rho \frac{l}{A}\) Resistivity ρ depends on material of conductor only. Electricity Basics Heating elements like heaters, electric irons, and water heaters operate based on the principle of heat generated by electric current. An electric bulb glows when an electric current flows through its filament. The power consumed in a circuit can be represented as P = VI or P = I^2R. The unit of power is measured in watts (W), while kilowatts (kW), megawatts (MW), and horsepower (HP) are larger units. One kilowatt equals 103 watts, one megawatt equals 106 watts, and one horsepower equals 746 watts. In commercial applications, electrical energy is measured in kilowatt-hours (KWh). The basic components of an electric circuit include: - Cell: A direct current source of electromotive force - Battery: A combination of two or more cells - Rheostat: A wire made from special alloys that controls the current when wound around a hollow cylinder - Switch: Used to open or close the electric circuit, controlling electron flow - Voltmeter: Measures potential difference in a circuit with high resistance and used in parallel with resistance wires - Fuse: A safety device with low melting point that breaks the circuit when current exceeds limits - Ammeter: Measures current flowing through a circuit with small resistance and used in series - LED: Glows even with weak electric currents allowed to pass through A detailed explanation of jargon can be found in NCERT Solutions for Class 10 Science Chapter 12 – Electricity. The chapter covers various topics related to electricity, including electric circuits, current, and resistance. An electric circuit is a continuous closed path made up of electric components through which an electric current flows. A simple circuit consists of conductors, cells, switches, and loads. The unit of current is ampere, defined as the flow of one coulomb of charge per second. The number of electrons constituting one coulomb of charge can be calculated using the equation Q = nqe, where n is the number of electrons and qe is the charge of an electron. Additionally, a device such as a battery helps to maintain a potential difference across a conductor. The potential difference between two points is 1 V when 1 J of work is done to move a charge of 1 C from one point to another. The energy given to each coulomb of charge passing through a 6 V battery can be calculated using the equation W = V × Q, where W is the work done and Q is the charge. Lastly, the resistance of a conductor depends on factors such as temperature, cross-sectional area, length, and nature of the material. Resistance is inversely proportional to the area of the cross-section of the wire, meaning thicker wires have lower resistance and vice versa. The amount of current flowing through an electrical component can be calculated using Ohm's Law, which states that I = V/R, where I is the current, V is the voltage, and R is the resistance. When the voltage is reduced to half while keeping the resistance constant, the new current can be calculated using Ohm's Law as follows: V' = V/2 R' = R I' = ? Substituting the values of V', R', and I' into Ohm's Law, we get: I' = V'/R' = (V/2)/R = V/2R Therefore, the current flowing through the electrical component is reduced by half. Additionally, alloys are used in heating appliances such as electric toasters and electric irons because of their high resistivity, which means they do not melt readily at high temperatures. This makes them ideal for use in applications where heat is generated. Using data from a table, we can compare the conductivity of different materials: * Iron has a higher conductivity than mercury * Silver has the lowest conductivity among all materials listed, making it the best conductor In a circuit consisting of three batteries connected in series and three resistors connected in parallel, an ammeter measures the current flowing through the resistors, while a voltmeter measures the potential difference across one of the resistors. The total resistance of the circuit is 25 Ω, and the current flowing through it can be calculated as follows: I = V/R = 6V / 25Ω = 0.24A The potential difference across the 12 Ω resistor can be calculated using Ohm's Law: V1 = I × R = 0.24A × 12Ω = 2.88V Therefore, the ammeter reading is 0.24 A and the voltmeter reading is 2.88 V. When resistors are connected in parallel, their equivalent resistance can be calculated using a formula or by measuring the current flowing through each resistor. When three resistors with values 1 Ω, 10^3 Ω, and 10^6 Ω are connected in parallel, the total resistance is simply 1 Ω, as they have no effect on each other due to their vastly different magnitudes. In another scenario, when a 100 Ω lamp, a 50 Ω toaster, and a 500 Ω water filter are connected in parallel to a 220 V source, we can calculate the equivalent resistance of these appliances by adding the reciprocals of their resistances (1/R_eq = 1/R_1 + 1/R_2 + 1/R_3). This results in an equivalent resistance of approximately 31.25 Ω for the electric iron connected to the same source, which would draw the same current as all three appliances. Using Ohm's law, we can find that the current through the electric iron is around 6.93 A. Connecting electrical devices in parallel with a battery offers several advantages over connecting them in series. One key benefit is that there is no voltage division among the appliances when connected in parallel, meaning each device experiences the full supply voltage. This also reduces the effective resistance of the circuit, making it easier for current to flow through the devices. For three resistors with values 2 Ω, 3 Ω, and 6 Ω, we can connect them to give a total resistance of (a) 4 Ω by placing 3 Ω and 6 Ω in parallel, then adding their equivalent resistance to 2 Ω. This results in an equivalent resistance of 2 Ω + 1 Ω = 4 Ω for the circuit. On the other hand, connecting all three resistors in parallel yields a total resistance of (b) 1 Ω. Lastly, if we have four coils with resistance values 4 Ω, 8 Ω, 12 Ω, and 24 Ω, their highest total resistance is achieved when connected in series, resulting in 48 Ω. In contrast, connecting them in parallel yields the lowest total resistance of approximately 2 Ω. The cord of an electric heater does not glow while the heating element does because it is made from a material like copper or aluminum with low resistance. This means that when current flows through the cord, it doesn't get hot enough to glow. In contrast, the heating element has high resistance and becomes red-hot as it draws more heat. Lastly, we can calculate the heat generated while transferring 96000 coulomb of charge in one hour through a potential difference of 50 V using the formula Q = VI. This results in a heat generation of approximately 4800 J. The law states that H = VIt, where H is the heat developed, V is the voltage, I is the current, and t is the time in seconds. For example, if an electric iron with a resistance of 20 Ω takes a current of 5 A for 30 s, the heat developed can be calculated as H = 100 × 5 × 30 = 1.5 × 104 J. The rate at which energy is delivered by a current determines the power of an appliance. The power can be calculated using the equation P = VI, where P is the power, V is the voltage, and I is the current. For instance, if an electric motor takes 5 A from a 220 V line, its power can be calculated as P = 220 V × 5 A = 1100 W. Similarly, the energy consumed by the motor in 2 hours can be calculated using the equation E = P × T, where E is the energy and T is the time. In another scenario, if a piece of wire with resistance R is cut into five equal parts and connected in parallel, the equivalent resistance can be calculated to find the ratio R/R'. The correct answer is d) 25. Additionally, the options listed do not represent electrical power in a circuit. Only options c) VI and d) V2/R correctly represent electrical power, while option b) IR2 does not. Finally, if an electric bulb rated 220 V and 100 W is operated on 110 V, its power consumption can be calculated using the equation P = V2/R. Substituting the values, we get P = (110)2/484 Ω = 25 W. Therefore, the correct answer is d) 25 W. in series and parallel combinations would be _____. (a) 1:2 (b) 2:1 (c) 1:4 (d) 4:1 Solution: Let Rs and Rp be the equivalent resistance of the wires when connected in series and parallel respectively. For the same potential difference V, the ratio of the heat produced in the circuit is given by Hence, the ratio of the heat produced is 1:4. By connecting two resistors either in series or parallel, various equivalent resistance values can be obtained. For instance, when two resistors are connected in parallel, their combined resistance is lower than each individual resistor. In contrast, when two resistors are connected in series, their total resistance is the sum of their individual resistances. Furthermore, multiple electric bulbs can be connected in parallel across a 220V line, with the maximum allowable current determining the number of lamps that can be safely connected. The resistance of each bulb can be calculated using the formula R = V^2/P, where V is the voltage and P is the power rating of the bulb. In addition, when two resistance coils are used in an electric oven, either separately, in series, or in parallel, different currents flow through the circuits. The current flowing through each coil can be calculated using Ohm's law, which states that I = V/R, where I is the current, V is the voltage, and R is the resistance. Comparing the power used in a resistor in different circuits, such as series and parallel combinations, reveals varying power consumption values. The power consumed by a resistor can be calculated using the formula P = V^2/R or P = I^2R, where P is the power, V is the voltage, I is the current, and R is the resistance. In the case of two lamps connected in parallel to an electric mains supply, the current drawn from the line is the sum of the currents drawn by each lamp, which can be calculated using the formula I = P/V, where I is the current, P is the power rating of the lamp, and V is the voltage. Finally, comparing the energy consumption of a 250W TV set and a 1200W toaster over different time periods reveals that energy consumption is directly proportional to both power and time. The energy consumed by an appliance can be calculated using the formula E = Pt, where E is the energy, P is the power, and t is the time. The energy consumed by an electrical appliance can be calculated using the formula H = Pt, where P is the power rating of the appliance and t is the time in seconds. For example, a TV with a power rating of 250 W consumes 9 × 10^5 J of energy in 3600 seconds, while a toaster with a power rating of 1200 W consumes 7.2 × 10^5 J of energy in 600 seconds. The rate at which heat is developed in an electric heater can be calculated using the formula P = I^2 R, where P is the power, I is the current, and R is the resistance. In this case, the electric heater draws 15 A from the mains for 2 hours, resulting in a power rating of 1800 W. Tungsten is commonly used as the filament in electric lamps due to its high resistivity and melting point, which makes it resistant to burning. Conductors in heating devices like bread-toasters and irons are often made of alloys because they have higher resistivity than pure metals, producing more heat when current passes through them. The series arrangement is not typically used for domestic circuits due to the distributed voltage and potential risks, such as appliances not receiving the rated power or failing if one device is defective. Additionally, increased total resistance reduces the overall current in the circuit. Resistance varies inversely with the area of cross-section; increasing the area decreases resistance, while decreasing it increases resistance. Copper and aluminum wires are often used for electricity transmission due to their low resistivity, resulting in minimal power losses as heat. Electricity is an integral part of our daily lives, and understanding how it works can be fascinating. From powering industries to lighting homes, electricity has been a crucial aspect of human civilization since the industrial revolution. With its vast applications, losing access to electricity would cause chaos in today's society. In this chapter, explore the fundamental concepts, including Ohm's law, resistivity, and resistance, as well as parallel and series combinations of resistors. Learn about the heating effect of electric current and its practical applications. Delve into the relationship between power, voltage, current, and resistance to grasp the intricacies of electricity. For further learning resources, visit NCERT Solutions Class 10 Science, designed to help you learn efficiently.