

Electricity - Class 10 Science

Selected & Rearranged Important Questions (Updated Version)

Prepared by Guru Home Tutors

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Section A: Very Short Answer / MCQ (1 Mark)

1. Define electric power. When do we say that the power consumed in an electric circuit is 1 watt?
2. State Ohm's law. Represent it mathematically.
3. Define one ampere.
4. List three factors on which the resistance of a conductor depends. Write the SI unit of resistivity.
5. How is the resistivity of alloys compared with those of pure metals from which they are formed?
6. Two unequal resistances are connected in parallel. What can be said about the voltage drop across the two resistors?

Section B: Short Answer Questions (2-3 Marks)

7. A wire of resistance R is cut into three equal parts and these parts are joined in parallel. Calculate the equivalent resistance.
8. In the given circuit (15 V battery with $10\ \Omega$ || $15\ \Omega$ in parallel, then in series with $60\ \Omega$ and $40\ \Omega$), calculate: (a) Total resistance of the circuit (b) Total current drawn from the source (c) Potential difference across the parallel combination of $10\ \Omega$ and $15\ \Omega$.
9. (a) Derive the relationship between resistance and resistivity for a cylindrical conductor. Also derive the SI unit of resistivity. (b) Why are alloys commonly used in electrical heating devices?
10. (a) Write the colour of insulation for Live and Neutral wires in domestic supply. (b) An electric iron of 1 kW is operated at 220 V. What should be the current rating of the circuit? (c) What is the function of the earth wire? Give its advantage.
11. Show how you would connect three resistors each of $6\ \Omega$ to get a combination of $9\ \Omega$.

12. Three resistors $10\ \Omega$, $15\ \Omega$ and $5\ \Omega$ are connected in parallel. Find the equivalent resistance.
13. A $6\ \Omega$ resistance wire is doubled on itself. Calculate the new resistance of the wire.
14. State Joule's law of heating. Write the mathematical expression for heat produced when current flows for time t .

Section C: Long Answer Questions (4-5 Marks)

15. Draw a labelled circuit diagram to verify Ohm's law. What type of graph do you expect between V and I ? How will you find resistance from this graph?
16. An electric iron rated 750 W , 200 V is used for 2 hours. Calculate: (i) Current flowing through it (ii) Resistance of its heating element (iii) Energy consumed in kWh and in joules.
17. Two lamps rated 100 W , 220 V and 60 W , 220 V are connected in parallel to 220 V mains. Calculate the total current drawn from the mains. Draw the circuit diagram.
18. In a house, two 50 W bulbs are used 6 hours daily and a 1 kW geyser is used for 1 hour daily. Calculate the total energy consumed in 30 days and the cost at $\text{₹ } 8$ per kWh.

Additional High-Weightage Questions

19. Why should an ammeter have very low resistance and a voltmeter have very high resistance?
20. A torch bulb is rated 5 V and 500 mA . Calculate its (i) Power (ii) Resistance (iii) Energy consumed when lighted for $2\frac{1}{2}$ hours.
21. Explain why a fuse wire melts at a particular current. Why is it made of alloy having high resistivity and low melting point?
22. How does the resistance of a wire change if: (a) Its length is doubled? (b) Its diameter is doubled?
23. Compare the power dissipated in a $2\ \Omega$ resistor when connected in series and parallel combinations in different circuits (as per board pattern).

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