

Attempt All Questions

Q1. How does the total resistance change when two resistors are connected in parallel?

- (a) Increases
- (b) Decreases
- (c) Remains the same
- (d) Becomes zero

Q2. Which of the following terms does not represent electrical power in a circuit?

- (a) I^2R
- (b) IR^2
- (c) VI
- (d) V^2/R

Q3. What happens to the resistance of a cylindrical conductor if its length is doubled and its area of cross-section is halved?

- (a) Remains unchanged
- (b) Becomes two times
- (c) Becomes four times
- (d) Becomes one-fourth

Q4. Define one volt of electric potential difference.

Q5. Write the SI unit of electric resistivity.

Q6. State Ohm's law.

Q7. A current of 0.5 A is drawn by a filament of an electric bulb for 10 minutes. Find the amount of electric charge that flows through the circuit.

Q8. Three resistors of resistances 2 Ohm, 3 Ohm, and 6 Ohm are connected in parallel. Find the total resistance of the combination.

Q9. Why is the parallel arrangement used in domestic electric circuits instead of a series arrangement? Give any three reasons.

Q10. Explain why the heating element of an electric iron is made of an alloy rather than a pure metal. Mention two properties required for this application.

(Note: Attempt any THREE questions from this section)

Q11. Two electric bulbs rated 220 V, 100 W and 220 V, 60 W are connected in parallel to an electric mains supply. What current is drawn from the line if the supply voltage is 220 V?

Q12. Derive the expression for the equivalent resistance of three resistors connected in series. Draw a neat circuit diagram for the same.

Q13. A copper wire has a diameter of 0.5 mm and resistivity of 1.6×10^{-8} Ohm m. What will be the length of this wire to make its resistance 10 Ohm? How much does the resistance change if the diameter is doubled?

Q14. An electric heater consumes energy at a rate of 840 W when heating is at the maximum rate and 360 W when the heating is at the minimum. The voltage is 220 V. Calculate the current and the resistance in each case.