

VIDYA BHAVAN, BALIKA VIDYAPEETH
SHAKTI UTTAN ASHRAM, LAKHISARAI, PIN:-811311

SUBJECT:- PHYSICS

CLASS:- XTH

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SUBJECT TEACHER:- MR. NEEL NIRANJAN

CHAPTER 1. (ELECTRICITY) (BASED ON NCERT PATTERN)

Q1. A piece of wire of 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' '?

Ans. 25 : 1

Q2. Which of the following terms does not represent electrical power in a circuit? (a) I^2R . (b) IR^2

(c) W .

(d) V^2/R

Ans. (b) IR^2

Q3. An electric bulb is rated 220 V and 100 W. When it is operated on 110 V, power consumed will be—. (a) 100 W. (b) 75 W

(c) 50 W

(d) 25 W

Ans. (d) 25 W.

Q4. Two conducting wires of the same material and of equal lengths and equal 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.

(d) 4 : 1

Ans. (c) 1 : 4

Q5. How is a voltmeter connected in the circuit to measure the potential difference between two points?

Ans. It is connected in parallel.

Q6. A copper wire, has diameter 0.5 mm and resistivity of $1.6 \times 10^{-8} \Omega \text{ m}$. What will be the length of this wire to make its resistance 10Ω ? How much does the resistance change if the diameter is doubled?

Ans. Diameter = 0.5 mm = 0.0005 m

$$\text{Radius } r = \frac{0.0005}{2} = 0.00025 \text{ m or } 25, 10^{-3} \text{ m}$$

$$\text{Resistivity } \rho = 1.6 \times 10^{-8} \Omega \text{ m}$$

$$\text{Resistance } R = 10 \Omega$$

$$\text{Length } l = ?$$

$$\text{Using } R = \rho \frac{l}{A} \text{ or } l = \frac{RA}{\rho}$$

$$l = \frac{10 \times 3.14 \times (25 \times 10^{-3})^2}{1.6 \times 10^{-8}}$$

$$= 122.7$$

Q7. What determines the rate at which energy is delivered by a current?

Ans. Electrical power determines the rate at which the energy is delivered by a current.