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Answers to NCERT/CBSE PHYSICS Class 12(Class XII)textbook Exercise and Additional exercise

CHAPTER THREE

CURRENT ELECTRICITY

EXERCISES

(For simplicity in numerical calculations, take g = 10 m s-2)

3.5 At room temperature (27.0 °C) the resistance of a heating element is 100 O. What is the temperature of the element if the resistance is found to be 117 O, given that the temperature coefficient of the material of the resistor is 1.70 × 10-4 °C-1.

3.5 $T_1 = 27^0 C \quad R_1 = 100\Omega \quad T_2 = ? \quad R_2 = 117\Omega$

$$\alpha = 1.7\times10^{-4\ 0}C^{-1}$$

$$\alpha = \frac{R_2 - R_1}{R_1(T_2 - T_1)}$$

$$1.7\times10^{-4} = \frac{117-100}{100(T_2 - 27)}$$

$$T_2 = 1027^0 C$$