ALL IMPORTANT DIAGRAMS IN PHYSICS FOR CLASS XII

CURRENT ELECTRICITY

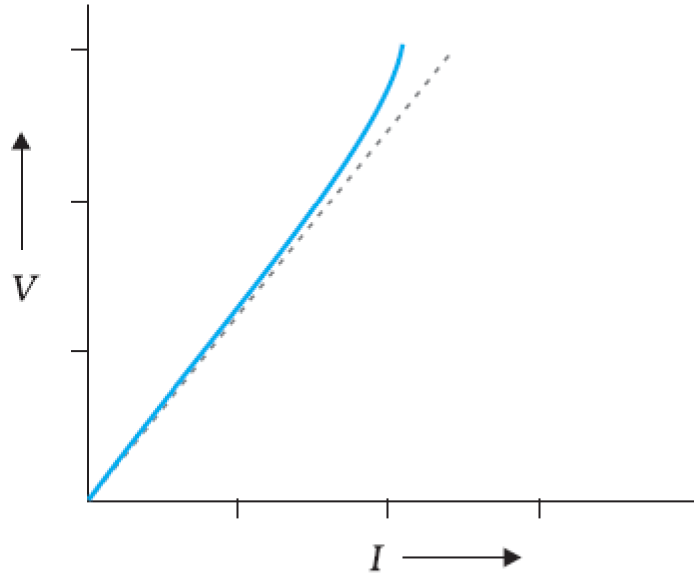

FIGURE 3.5 The dashed line represents the linear Ohm's law. The solid line is the voltage *V* versus current *I* for a good conductor.

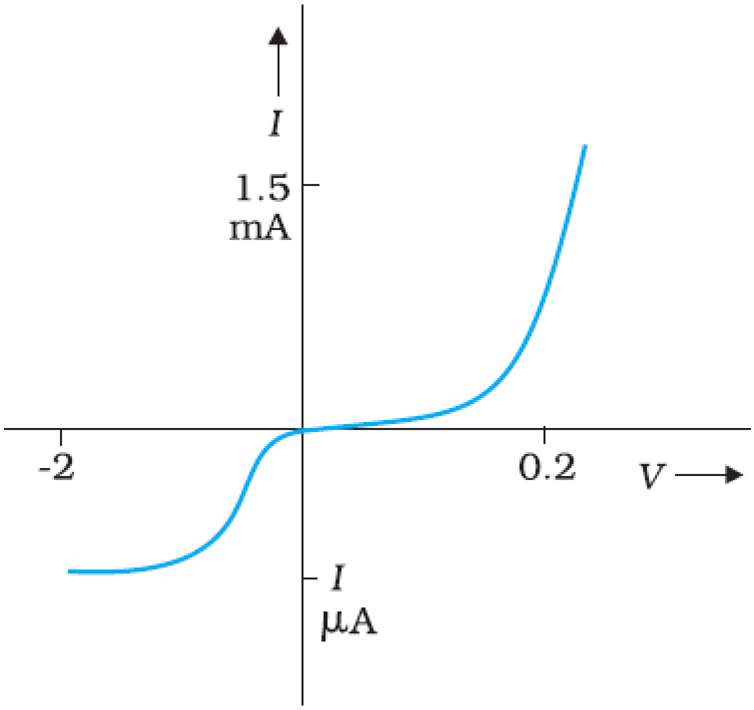

FIGURE 3.6 Characteristic curve of a diode. Note the different scales for negative and positive values of the voltage and current.

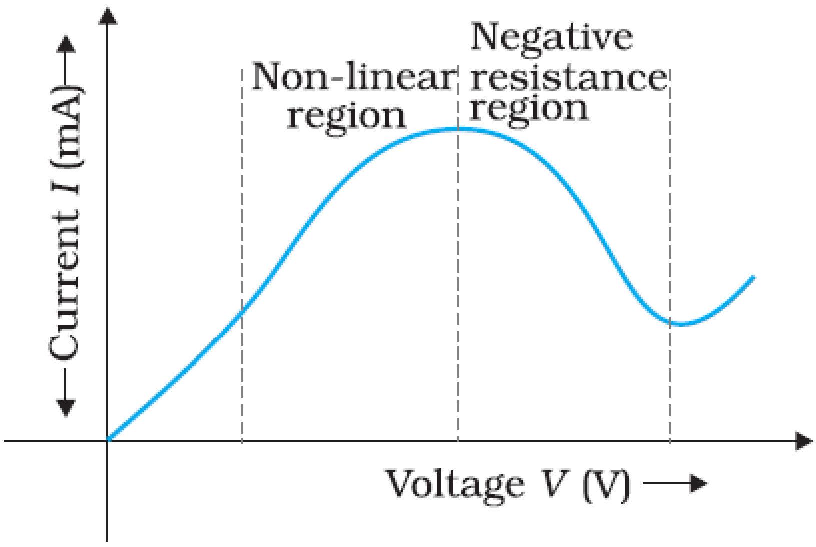

FIGURE 3.7 Variation of current versus voltage for GaAs.

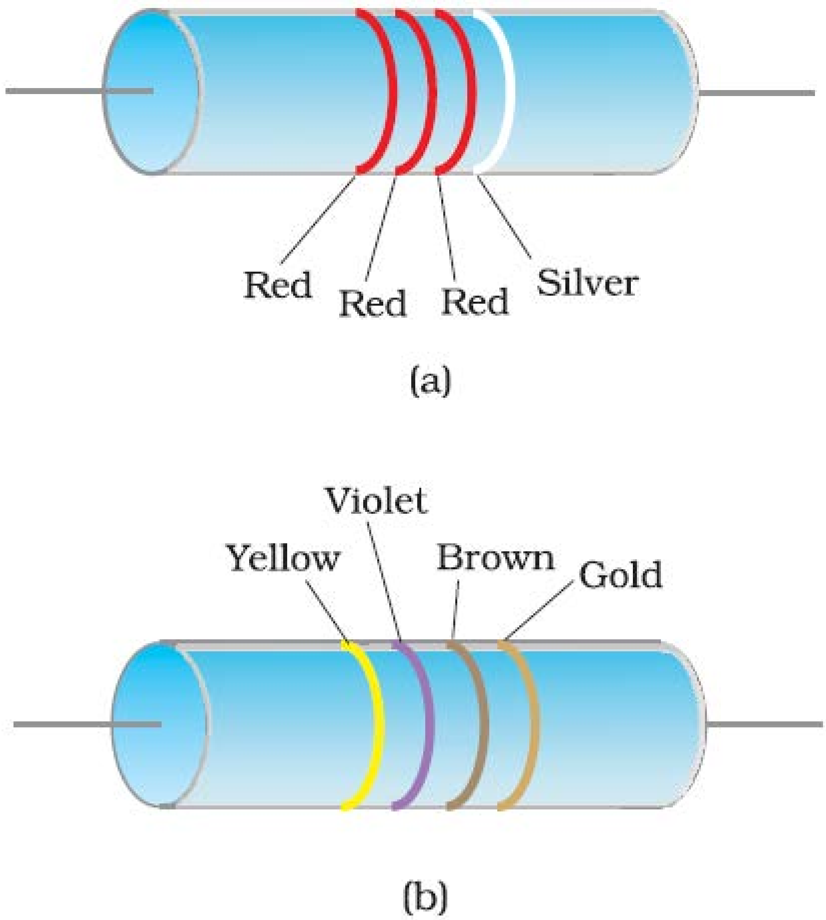

FIGURE 3.8 Colour coded resistors
(a) $(22 \times 10^2\ \Omega) \pm 10\%$,
(b) $(47 \times 10\ \Omega) \pm 5\%$.

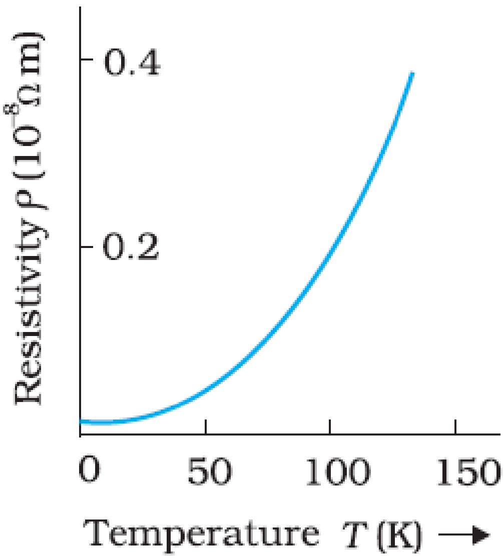

FIGURE 3.9 Resistivity ρ_T of copper as a function of temperature T.

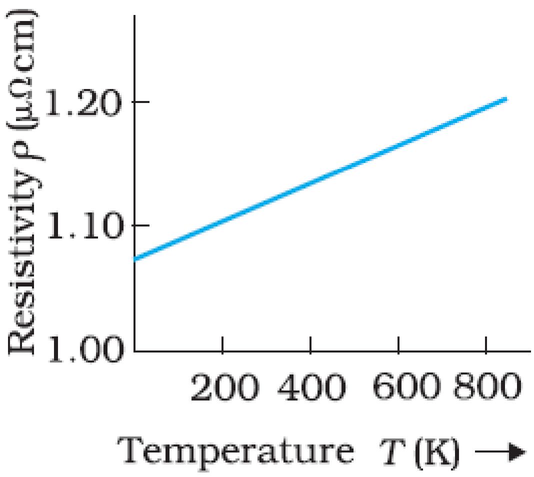

FIGURE 3.10 Resistivity ρ_T of nichrome as a function of absolute temperature T.

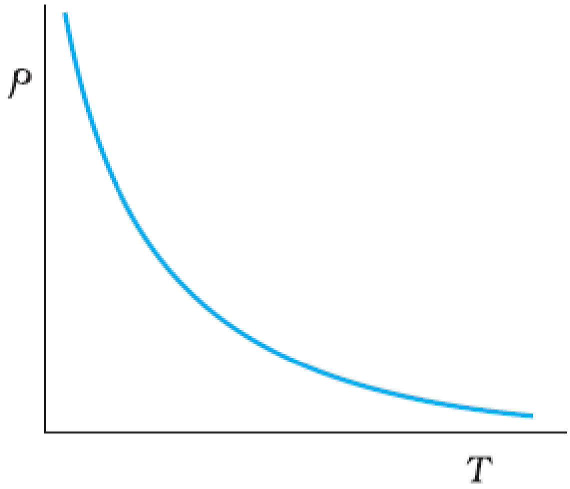

FIGURE 3.11
Temperature dependence of resistivity for a typical semiconductor.

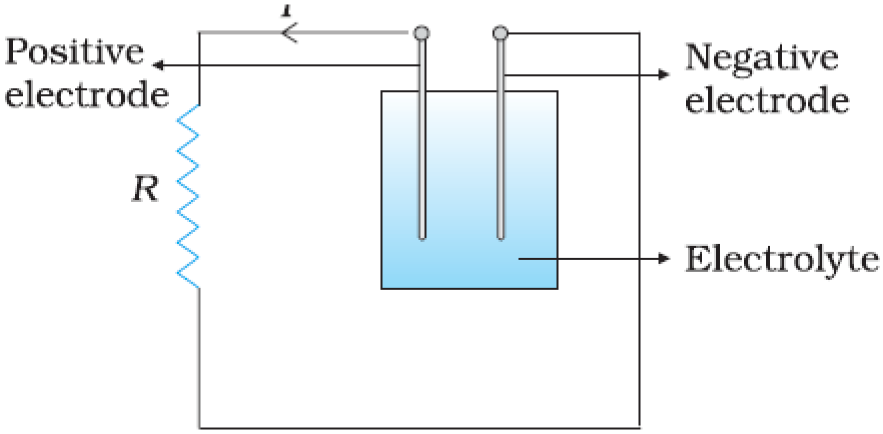

FIGURE 3.12 Heat is produced in the resistor R which is connected across the terminals of a cell. The energy dissipated in the resistor R comes from the chemical energy of the electrolyte.

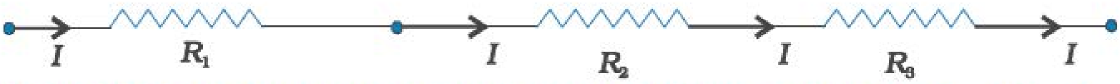

FIGURE 3.14 A series combination of three resistors R_1, R_2, R_3.

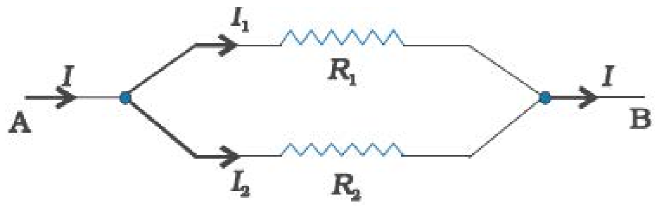

FIGURE 3.15 Two resistors R_1 and R_2 connected in parallel.

(Fig. 3.16).

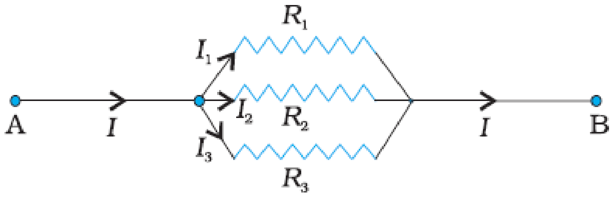

FIGURE 3.16 Parallel combination of three resistors R_1, R_2 and R_3.

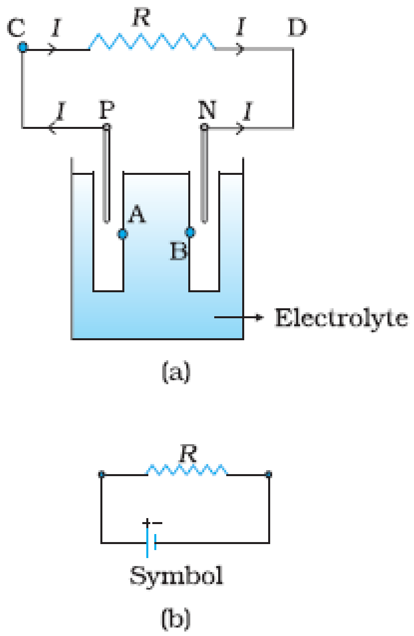

FIGURE 3.18 (a) Sketch of an electrolyte cell with positive terminal P and negative terminal N. The gap between the electrodes is exaggerated for clarity. A and B are points in the electrolyte typically close to P and N. (b) the symbol for a cell, + referring to P and – referring to the N electrode. Electrical connections to the cell are made at P and N.

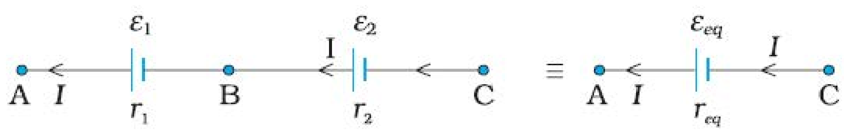

FIGURE 3.20 Two cells of emf's ε_1 and ε_2 in the series. r_1, r_2 are their internal resistances. For connections across A and C, the combination can be considered as one cell of emf ε_{eq} and an internal resistance r_{eq}.

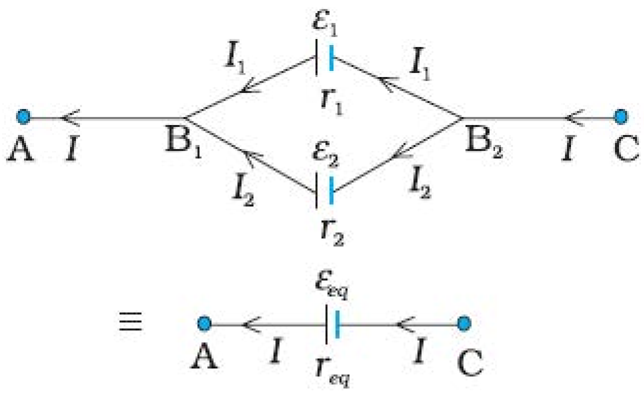

FIGURE 3.21 Two cells in parallel. For connections across A and C, the combination can be replaced by one cell of emf ε_{eq} and internal resistances r_{eq} whose values are given in Eqs. (3.64) and (3.65).

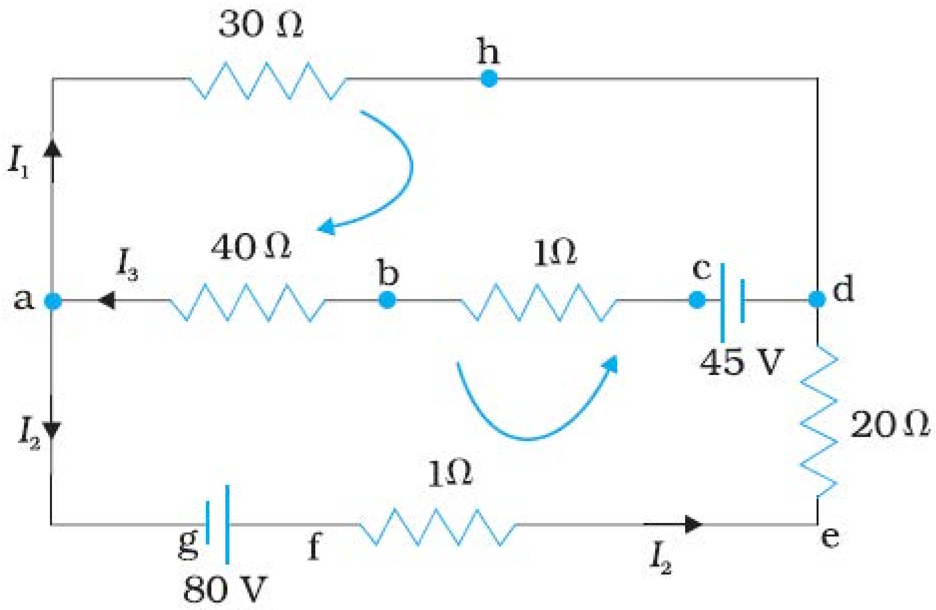

FIGURE 3.22 At junction a the current leaving is $I_1 + I_2$ and current entering is I_3. The junction rule says $I_3 = I_1 + I_2$. At point h current entering is I_1. There is only one current leaving h and by junction rule that will also be I_1. For the loops 'ahdcba' and 'ahdefga', the loop rules give $-30I_1 - 41\ I_3 + 45 = 0$ and $-30I_1 + 21\ I_2 - 80 = 0$.

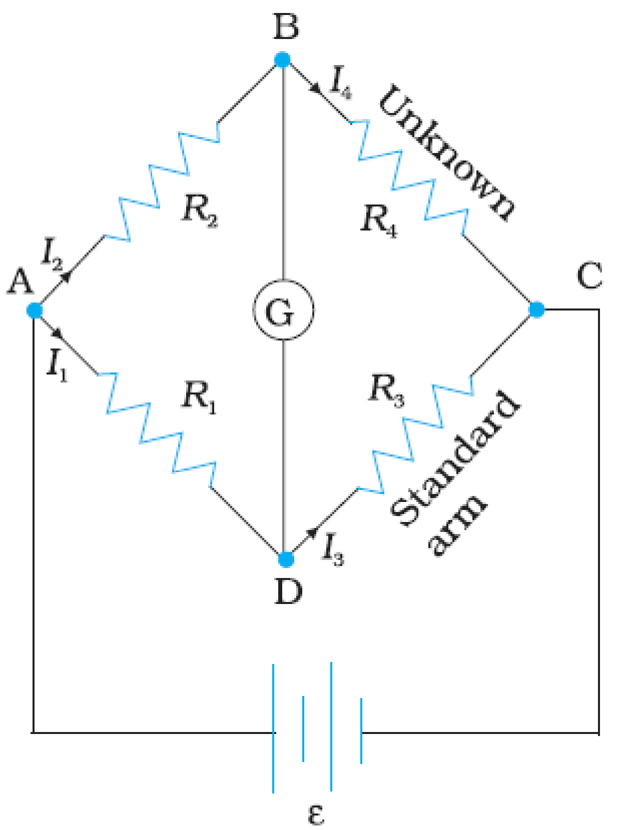

FIGURE 3.25

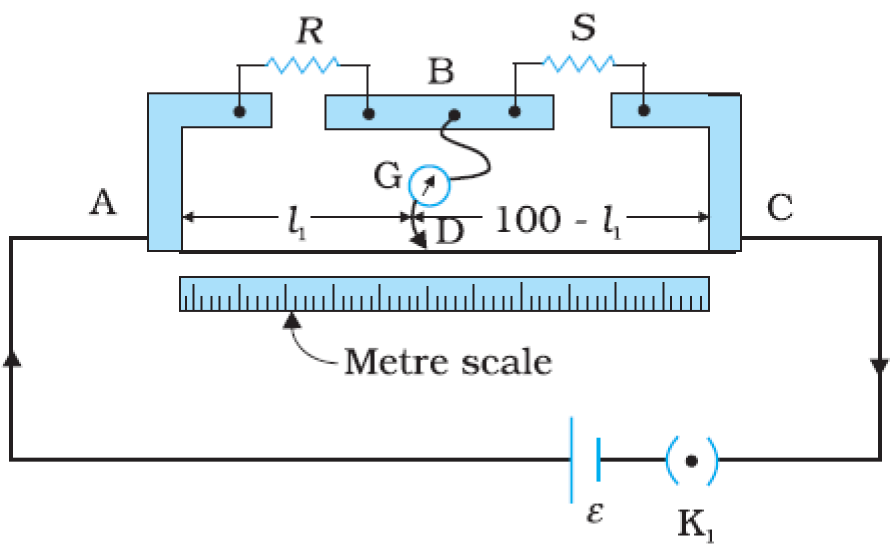

FIGURE 3.27 A meter bridge. Wire AC is 1 m long. R is a resistance to be measured and S is a standard resistance.

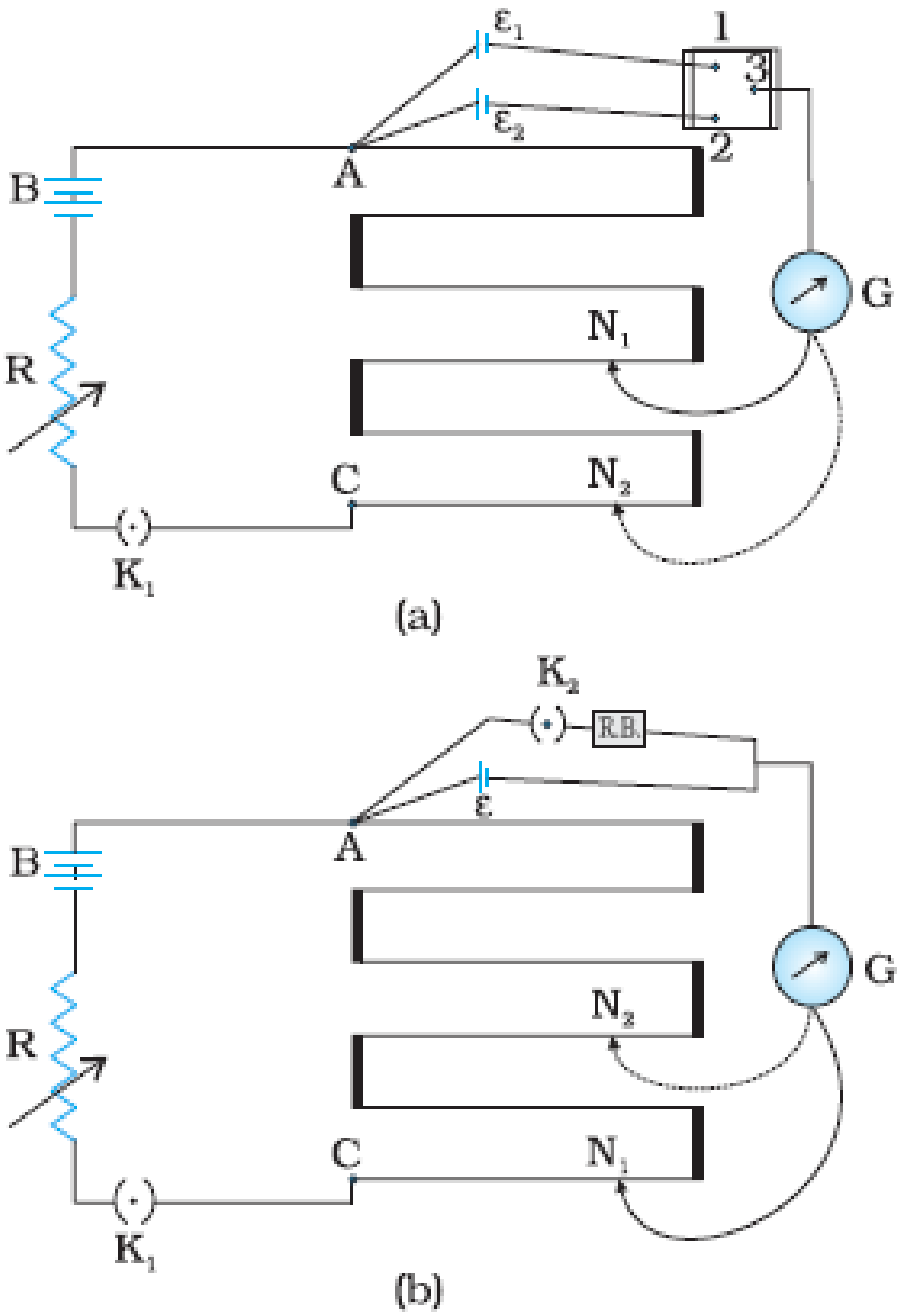

FIGURE 3.28 A potentiometer. *G* is a galvanometer and *R* a variable resistance (rheostat). 1, 2, 3 are terminals of a two way key (a) circuit for comparing emfs of two cells; (b) circuit for determining internal resistance of a cell.