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Problem 32.18 (RHK)

A human being can be electrocuted if a current as small as 50 mA *passes near the heart. An electrician working with sweaty hands makes good contact with two conductors being held in each hand. If the electrician's resistance is* $1800\,\Omega$ *, we have to estimate the fatal voltage.*

Solution:

For answering this problem we will Ohm's law. Relation between voltage, *V*, current, *i*, and resistance, *R*, is

$V = iR.$

Resistance of the electrician is

$R = 1800\ \Omega.$

The fatal current is

$i = 50\ \text{mA} = 50 \times 10^{-3}\ \text{A}.$

The fatal voltage will therefore be

$V = 1800 \times 50 \times 10^{-3}\ \text{V} = 90\ \text{V}.$