61. We denote silicon with subscript s and iron with i. Let $T_0 = 20°$. If

$$\begin{aligned} R(T) &= R_s(T) + R_i(T) = R_s(T_0)[1 + \alpha(T - T_0)] + R_i(T_0)[1 + \alpha_i(T - T_0)] \\ &= (R_s(T)_0\alpha_s + R_i(T_0)\alpha_i) + (\text{temperature independentterms}) \end{aligned}$$

is to be temperature-independent, we must require that $R_s(T_0)\alpha_s + R_i(T_0)\alpha_i = 0$. Also note that $R_s(T_0) + R_i(T_0) = R = 1000\,\Omega$. We solve for $R_s(T_0)$ and $R_i(T_0)$ to obtain

$$R_s(T_0) = \frac{R\alpha_i}{\alpha_i - \alpha_s} = \frac{(1000\,\Omega)(6.5 \times 10^{-3})}{6.5 \times 10^{-3} + 70 \times 10^{-3}} = 85.0\ \Omega\ ,$$

and $R_i(T_0) = 1000\,\Omega - 85.0\,\Omega = 915\,\Omega$.