Phy 2049
Exam I Solutions

For answers to problems 1-12, go to solutions for exam I summer 2007.

13. A nichrome wire is 1m long and $1 \times 10^{-6}$ $m^2$ in cross-sectional area. When connected to a potential difference of 2V, a current of 4A exists in the wire. The resistivity of this nichrome is:
A. $5 \times 10{-}7\ \Omega \cdot m$
B. $2 \times 10{-}7\ \Omega \cdot m$
C. $4 \times 10{-}7\ \Omega \cdot m$
D. $8 \times 10{-}7\ \Omega \cdot m$
E. $10{-}7\ \Omega \cdot m$

*The resistance $R = V/I = 0.5\ \Omega$. The relation $R = \rho l/A$ relates the resistivity $\rho$ to $\rho = RA/l = 5x10^{-7}\ \Omega \cdot m$.*

14. A flat iron is marked "120V, 600W". In normal use, the current in it is:
A. 5A
B. 4A
C. 2A
D. 7.2A
E. 0.2A

*Power $P = VI$. It follows that $I = P/V = 5A$.*