

Answers to selected questions

Chapter 13

- Q6.** No, it is much slower. Typical speeds of signals in axons are about 150 m/s, typical speeds of electrical signals in metal wire are about 150,000,000 m/s!
- Q12** Decrease. For a conductor obeying Ohm's Law ($V = IR$), decreasing the potential difference across a given conductor (resistor), decreases the current proportionally.
- Q18** The current in R_3 will decrease because disconnecting R_2 will result in a larger total resistance in the circuit.
- Q24** $P = I^2 R$. The power dissipated will quadruple. The power dissipated is proportional to the square of the current.
- Q30** No. To protect a circuit the fuse must be placed in series with the other elements. If a fuse in parallel blows, the circuit will still be closed and current will still flow. A fuse across an element just provides a conducting path around the element and will probably blow without providing any protection.