1. Conduction electrons move to the right in a certain wire. This indicates that:
   (a) the current density and electric field both point right
   (b) the current density and electric field both point left
   (c) the current density points right and electric field points left
   (d) the current density points left and electric field points right
   (e) the current density points left but the direction of the electric field is unknown

2. If $\vec{J}$ is the current density and $d\vec{A}$ is a vector element of area, then the integral $\int_S \vec{J} \cdot d\vec{A}$ over an area, $S$, represents:
   (a) the electric flux through the area
   (b) the average current density at the position of the area
   (c) the resistance of the area
   (d) the resistivity of the area
   (e) the current through the area

3. Two wires are made of the same material and have the same length but different radii. They are joined end-to-end and a potential difference is maintained across the combination. Of the following, the quantity that is the same for both wires is:
   (a) potential difference
   (b) current
   (c) current density
   (d) electric field
   (e) conduction electron drift speed

4. For a cylindrical resistor made of Ohmic material, the resistance does NOT depend on:
   (a) the current
   (b) the length
   (c) the cross-sectional area
   (d) the resistivity
   (e) the electron drift velocity

5. You buy a “75 W” light bulb. The label means that:
   (a) no matter how you use the bulb, the power will be 75 W
   (b) the bulb was filled with 75 W at the factory
   (c) the actual power dissipated will be much higher than 75 W, since most of the power appears as heat
   (d) the bulb is expected to burn out after you use up its 75 W
   (e) none of the above