**Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**PHY2049C, Quiz 5**

**A- Read all the quiz once, or twice, before beginning to write. Make sure to comprehend all questions and start with those you fell most confident.**

**B – Be clear and concise. There are no extra points for being verbose or writing extra.**

**C –Only use the white pages that I will provide. You have 60 minutes to answer the quiz.**

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**Problem 1**

Figure 1 shows a rectangular solid conductor of edge lengths *L*, 2*L*, and 3*L*.A potential difference *V* is to be applied uniformly between pairs of opposite faces of the conductor as in Figure 2 (The potential difference is applied between the entire face on one side and the entire face on the other side.) First *V* is applied between the left–right faces, then between the top–bottom faces, and then between the front–back faces. Rank those pairs, greatest first, according to the following (within the conductor): (a) the magnitude of the electric field, (b) the current density, (c) the current.

A rectangular object with text

AI-generated content may be incorrect.**A close-up of a vent

AI-generated content may be incorrect.**

Figure 1 Figure 2: Potential difference is applied across an entire face

**Problem 2**

All batteries and lightbulbs are identical. Rank the light bulbs in terms of which emits most light in their respective arrangements.

A diagram of a battery and two light bulbs

AI-generated content may be incorrect.A diagram of a battery and two light bulbs

AI-generated content may be incorrect.A diagram of a battery and two light bulbs

AI-generated content may be incorrect.

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**Problem 3**

A diagram of a rectangular object with blue lines and arrows

AI-generated content may be incorrect.The Figure shows a 4cm wide plastic film being wrapped onto a 2-cm-diameter roller that turns at 50 rpm (revolutions per minute). The plastic has a uniform surface charge density of -2.0 nC/m^2. What is the current of the moving film?