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

**PHY2049C, Quiz 3**

**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**

The figure shows three uniformly charged cylinders of length L and uniform charge Q. Concentric with each cylinder is a cylindrical Gaussian surface, with all three surfaces having the same radius. Rank the Gaussian surfaces according to the electric field at any point on the surface, greatest first.

A diagram of a cell

AI-generated content may be incorrect.

**Problem 2**

An insulating hollow sphere has inner radius *a* and outer radius *b*. Within the insulating material the volume charge density is given by = *c/r*, where c is a positive constant. What is the field a point *r* outside of the sphere?

**Problem 3**

A school photographer is taking a photograph of the two padel teams (which have 2 players each team). She has to arrange 4 people, all of different heights, in two rows of two, one behind the other. Each person at the back must be taller than the person directly in front of them. Along the rows the heights must increase from left to right. In how many different ways can four people be arranged in this way for a photo?