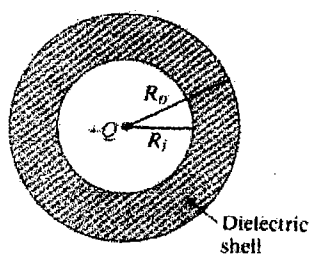
大葉大學 九十三 學年度 研究所碩士班 招生考試試題紙					
系所別	組別	考試科目（中文名稱）	考試日期	節次	備註
電信工程	甲	電磁學	3月28日	第三節 13:30~15:00	共二張（第一張）

註：考生可否攜帶計算機或其他資料作答，請在備註欄註明（如未註明，一律不准攜帶）

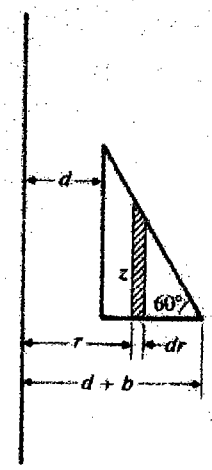
1. Write down the Maxwell's Equations for both differential and integral forms. (16%)
2. A positive point charge Q is at the center of a spherical dielectric shell of an inner radius R_i and an outer radius R_o. The dielectric constant of the shell is ε_r.

   Determine $\vec{E}, V, \vec{D}$, and $\vec{P}$. For (a) $R > R_o$ (b) $R_i < R \le R_o$, and (c) $R < R_i$

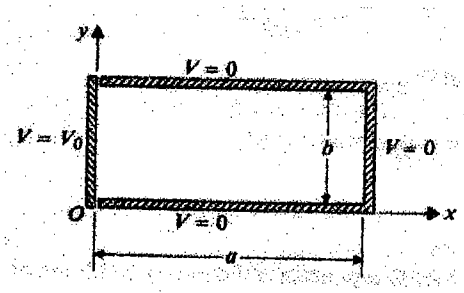
   (24%)



3. Determine the mutual inductance between a conducting triangular loop and a very long straight shown in the figure. (20%)



4. Consider the region enclosed on three sides by grounded conducting planes shown in the figure. The end plate on the left is insulated from the grounded sides and has a constant potential V_0. All planes are assumed to be infinite in extent in the z-direction. Determine the potential distribution within this region. (20%)



5. A cylindrical capacitor consists of an inner conductor of radius a and an outer

大葉大學 九十三 學年度 研究所碩士班 招生考試試題紙					
系所別	組別	考試科目（中文名稱）	考試日期	節次	備註
電信工程	甲	電磁學	3月28日	第三節 13:30~15:00	共二張（第二張）

註：考生可否攜帶計算機或其他資料作答，請在備註欄註明（如未註明，一律不准攜帶）

conductor whose inner radius is b. The space between the conductors is filled with a dielectric of permittivity ε, and the length of the capacitor is L. Determine the capacitance of this capacitor. (20%)