

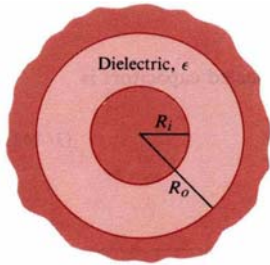
國立高雄大學 103 學年度研究所碩士班招生考試試題

科目：電磁學
 考試時間：100 分鐘

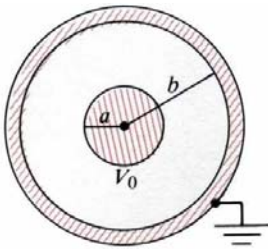
系所：應用物理學系
 本科原始成績：100 分

是否使用計算機：是

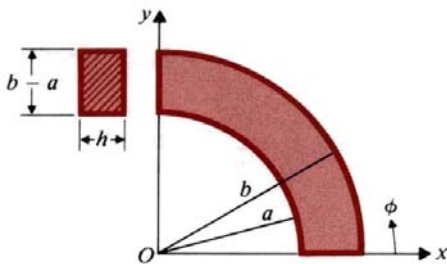
1. A spherical capacitor consists of an inner conducting sphere of radius R_i and an outer conductor with a spherical inner wall of radius R_o . The space in between is filled with a dielectric of permittivity ϵ . Determine the capacitance. (20 points)



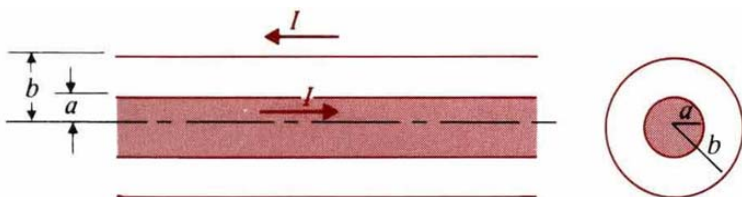
2. Consider a very long coaxial cable. The inner conductor has a radius a and is maintained at a potential V_0 . The outer conductor has an inner radius b and is grounded. Determine the potential distribution in the space between the conductors. (20 points)



3. A conducting material of uniform thickness h and conductivity σ has the shape of a quarter of flat circular washer, with inner radius a and outer radius b . Determine the resistance between the end faces. (20 points)



4. By using the stored magnetic energy, determine the inductance per unit length of an air coaxial transmission line that has a solid inner conductor of radius a and a very thin outer conductor of inner radius b . (20 points)



國立高雄大學 103 學年度研究所碩士班招生考試試題

科目：電磁學
考試時間：100 分鐘

系所：應用物理學系
本科原始成績：100 分

是否使用計算機：是

5. Please write down and explain the physical meanings of Maxwell's equations. (20 points)