

大葉大學 九十三 學年度 碩士在職專班 招生考試試題紙

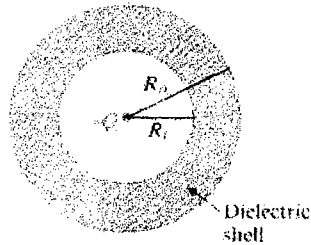
系 所 別	組 別	考 試 科 目 (中文名稱)	考 試 日 期	節 次	備 註
電信工程	甲	電磁學	3月28日	第一節 08:30~10:00	共二頁

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）

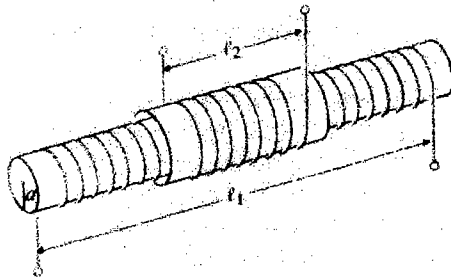
- Write down the Maxwell's Equations for both differential and integral forms.
(16%)
- A positive point charge Q is at the center of a spherical dielectric shell of an inner radius R_i and an outer radius R_o . The dielectric constant of the shell is ϵ_r .

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

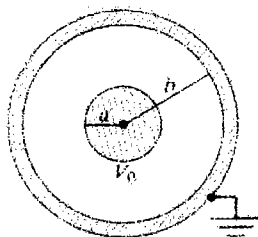
(24%)



- Two coils of N_1 and N_2 turns are wound concentrically on a straight cylindrical core of radius a and permeability μ . The windings have lengths ℓ_1 and ℓ_2 , respectively. Find the mutual inductance between the coils. (20%)



- 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%)



- A spherical capacitor 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%)

