系別：電機工程學系　　　　科目：電　磁　學(含電磁波)

准帶項目請打「V」	
X	簡單型計算機

本試題共　2　頁，5　大題

【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_0. The space in between is filled with a dielectric of permittivity ε. Determine the capacitance. （20%）

【2】Consider the region enclosed on two sides by grounded conducting planes show in Fig. 1. 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%）

Fig. 1.

【3】An emf V is applied across a parallel-plate capacitor of area S. The space between the conducting plates is filled with two different lossy dielectrics of thicknesses d_1 and d_2, permittivities ε_1 and ε_2, and conductivities σ_1 and σ_2, respectively. Determine the electric field intensities in both dielectrics. （20%）

淡江大學 97 學年度碩士班招生考試試題

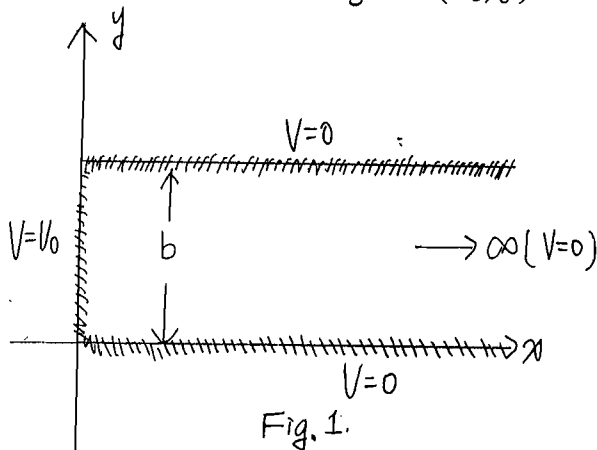系別：電機工程學系　　　科目：電　磁　學(含電磁波)

准帶項目請打「V」	
X	簡單型計算機

本試題共　2　頁，5　大題

【4】Find the magnetic flux density at a distant point of a small circular loop of radius b that carries current I (a magnetic dipole) （20%）

【5】A uniform plane wave (E_i, H_i) of an angular frequency ω is incident from air on a very large, perfectly conducting wall at an angle of incidence θ_i with perpendicular polarization, as shown in Fig. 2. Find the time-average Poynting vector in medium 1 and 2. （20%）
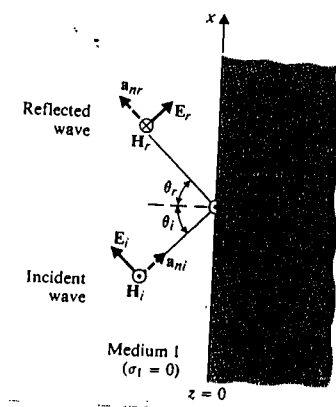

Fig. 2