

科目：電磁學

適用：應光系

編號：392

考生注意：

1. 依次序作答，只要標明題號，不必抄題。
2. 答案必須寫在答案卷上，否則不予計分。
3. 限用藍、黑色筆作答；試題須隨卷繳回。

本 試 題

共 1 頁

第 / 頁

1. Find the total charge within $0 \leq x \leq 1$, $0 \leq y \leq 1$, $0 \leq z \leq 1$, if the electric

flux density $\vec{D} = (x \hat{a}_x + 3y^2 \hat{a}_y + z \hat{a}_z) \text{ nC/m}^2$. (25%)

2. Write down the unit of the following terms:

(a) electric field (b) permittivity (c) permeability (d) magnetic field intensity (e) conductivity (25%)

3. Determine the resistance between two concentric spherical surfaces of radii a and b ($a < b$), assuming that a material of conductivity $\sigma = \sigma_0 \frac{k}{R^2}$ fills the space between them. (25%)

4. A current sheet $K = 10\hat{a}_x \text{ A/m}$ flows in the plane $z=0$, while another current sheet of $K = -5\hat{a}_y \text{ A/m}$ flows in the plane $z=5 \text{ m}$. Find the magnetic field intensity everywhere. (25%)