國立臺北科技大學

九十九學年度研究所碩士在職專班入學考試

電腦與通訊研究所

丙組：電磁學試題

填准考證號碼

注意事項：

1. 本試題共【十】題，配分共 100 分。
2. 請按順序標明題號作答，不必抄題。
3. 全部答案均須答在試卷答案欄內，否則不予計分。

(請勿使用計算機)

1. **Summarize Maxwell's equations in integral form. (12%)**
2. **Give the expression that describes the electric field intensity $\bar{E}$ at $\bar{R}_f$ due to a point charge Q at $\bar{R}_s$. (10%)**
3. **Describe the Biot-Savart law. (10%)**
4. **State the Lorenz force equation. (10%)**
5. **What is loss tangent for dielectric materials? (8%)**
6. **Derive Poisson's equation. (10%)**
7. **What is transverse electromagnetic wave? (10%)**
8. **What is the input impedance $Z_{in}(\ell)$ of a lossless transmission line of characteristic impedance Z_0, phase constant β, and length ℓ terminated by a load impedance Z_L? (10%)**
9. **What is the relationship revealed in the Smith Chart? (10%)**
10. **Define "electromagnetic wave polarization". (10%)**