

科目：控制系統導論

適用：電機系

編號：355

考生注意：

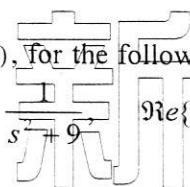
1. 依次序作答，只要標明題號，不必抄題。
2. 答案必須寫在答案卷上，否則不予計分。
3. 限用藍、黑色筆作答；試題須隨卷繳回。

本試題
共 / 頁
第 / 頁

1. Determine the Laplace transform and the associated region of convergence and pole-zero plot for the following function of time: (20 points)

$$x(t) = e^{-2t}u(t) + e^{-3t}u(t).$$

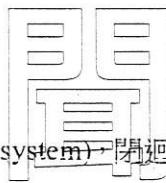
2. Determine the function of time, $x(t)$, for the following Laplace transform and their associated region of convergence: $\frac{1}{s^2 + 9}$, $\operatorname{Re}\{s\} > 0$. (10 points)



3. Write down and prove time-convolution theorem for Laplace transform. (10 points)

4. Find the z-transform of the following sequence: (20 points)

$$x(n) = 2^n u(n) + 3(\frac{1}{2})^n u(n)$$



5. 相較於開迴路控制系統(open-loop system)、閉迴路控制系統(closed-loop control)具有哪三項主要的優點？ (15 points)

6. 何謂 PID 控制器(controller)？PID 控制器有何重要特性？ (25 points)

