淡江大學九十一學年度碩士班招生考試試題

系別：機械與機電工程學系　　科目：自 動 控 制

96-1

准帶項目請打「○」否則打「×」	
計算機	字典
○	×

本試題共 2 頁

本試題雙面印製

(1) (a) What is the concept of Frequency Response? How do you apply Frequency Response to a physical system? (10%)

(b) What is the Root Locus of a control system? Please describe two ways of obtaining the Root Locus? (10%)

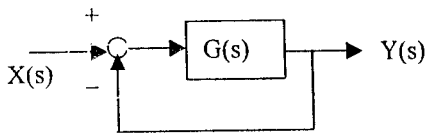

Fig. 1 unit feedback control system

(2) If $G(s)=\dfrac{Ks(s+2)}{(s^2-4s+8)(s+3)}$ in Fig. 1, (20%)

(a) Find the range of K for stability.

(b) Find the frequency of oscillation when the system is marginally stable.

(3) If $G(s)=\dfrac{1}{s(s+3\alpha)}$ in the Fig. 1, (20%)

please plot the Root Locus of the system as α is varied.

(4) Sketch the bode plots for the transfer function. (20%)

$$G(s)=\frac{200(s+1)}{s(s+50)}$$

淡江大學九十一學年度碩士班招生考試試題

系別：機械與機電工程學系　　科目：自 動 控 制　　96-2

准帶項目請打「○」否則打「×」	
計算機	字典
○	×

(5) From Fig. 1, if $G(s) = \dfrac{2K}{s(Ts+1)}$ determine the value of K and T from the response cure shown below.

(20%)