

國立臺北科技大學

九十八學年第一學期電機系博士班資格考試

控制系統(大學部)試題

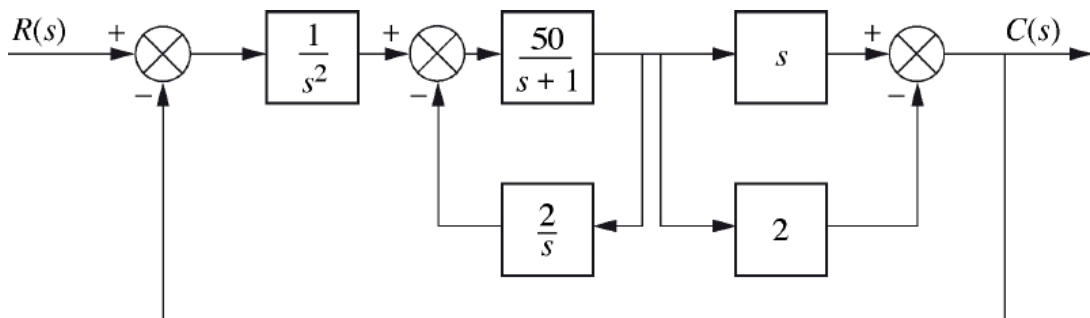
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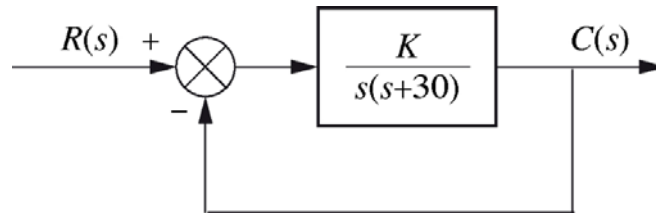
注意事項：

1. 本試題共 5 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。
4. 考試時間：二小時。
5. 可用計算機。

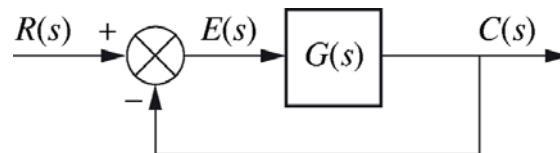
1. Find the transfer function $T(s) = C(s)/R(s)$ of the following system (20%).



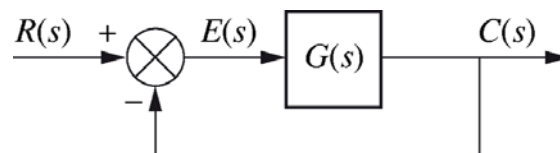
2. Find the K value that yields 20% overshoot for a step input in the following system (20%).



3. For the following unity feedback system with $G(s) = \frac{K(s+6)}{s(s+1)(s+3)}$, determine the range of K to ensure stability (20%)



4. Sketch the root locus for the following unity feedback system with $G(s) = \frac{K}{(s+1)^3(s+4)}$ (20%)



5. Sketch the Bode asymptotic magnitude and asymptotic phase plots for the following unity feedback system with $G(s) = \frac{(s+3)(s+5)}{s(s+2)(s+4)}$ (20%)

