

國立臺北科技大學
100 學年度研究所碩士在職專班入學考試

能源與冷凍空調工程系碩士班
乙組：自動控制試題

填准考證號碼

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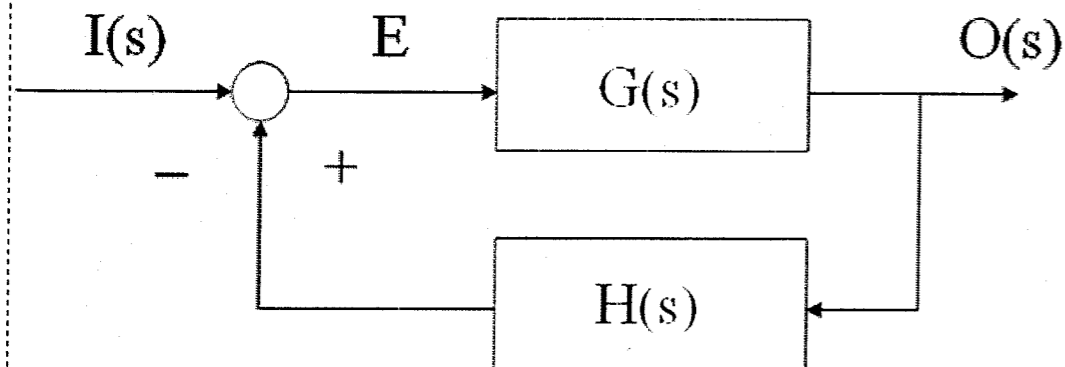
第一頁 共一頁

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。

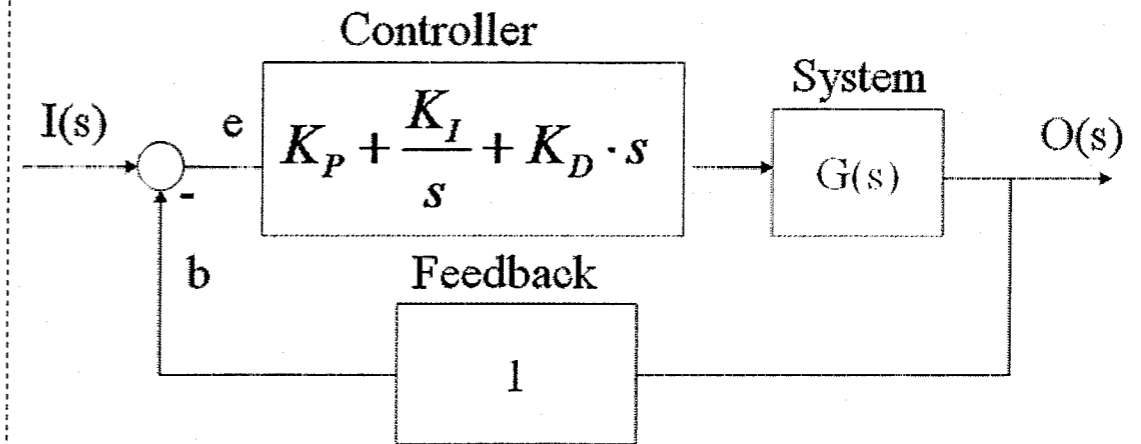
1. Explain what's Laplace Transform (10 pts) and write down its formal definition (10 pts).

2. Derive transfer function of the system expressed as the following figure (20 pts).



3. In a room, the total thermal mass is MC and the air inlet volume flow rate is m' . A air-conditioner is installed in this room and its cooling capacity is Q . Assuming the outside temperature is a constant, T_o , derive the governing equation to get the relation of indoor temperature, T , and cooling capacity (20 pts).

4. PID controller can be modeled by the following block diagram. Explain how to adjust parameters of controller to achieve energy-conservation control (20 pts).



5. Inverter control is widely employed to achieve energy saving control. Explain its working principals (20 pts).