

國立臺北科技大學
102 學年度研究所碩士在職專班招生

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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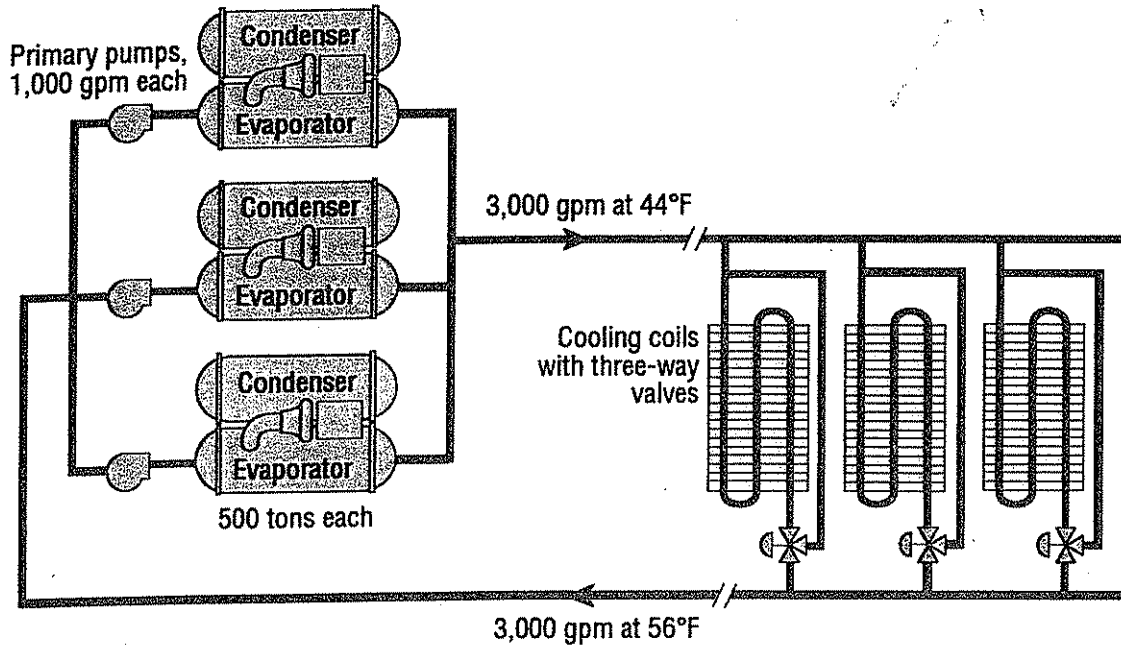
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注意事項：

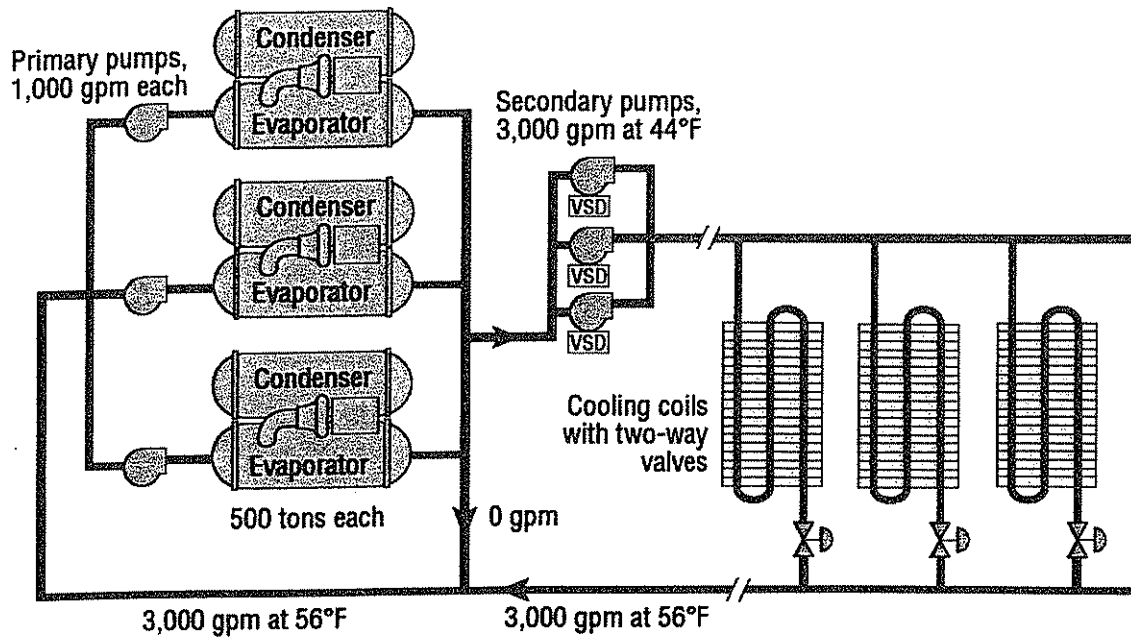
1. 本試題共【5】題，配分共 100 分。
2. 請按順序標明題號作答，不必抄題。
3. 全部答案均須答在試卷答案欄內，否則不予計分。

1. Explain what's PID control (10 pts) and write down transfer function of PID controller (10pts).
2. A control system has a large steady state error with respect to a switch on operation. Explain the reason according to types of control system (10 pts) and illustrate how to avoid the steady state error (10 pts).
3. Explain what's ON/Off control (10 pts) and describe working principals of this kind of controller (10 pts)
4. Explain what's inverter control (10 pts) and illustrate how this kind of controller can be employed for energy conservation of an air-conditioner (10 pts).

5. Three different chiller system designs can be illustrated by the following figures:
Chiller system [A] with constant primary flow configuration

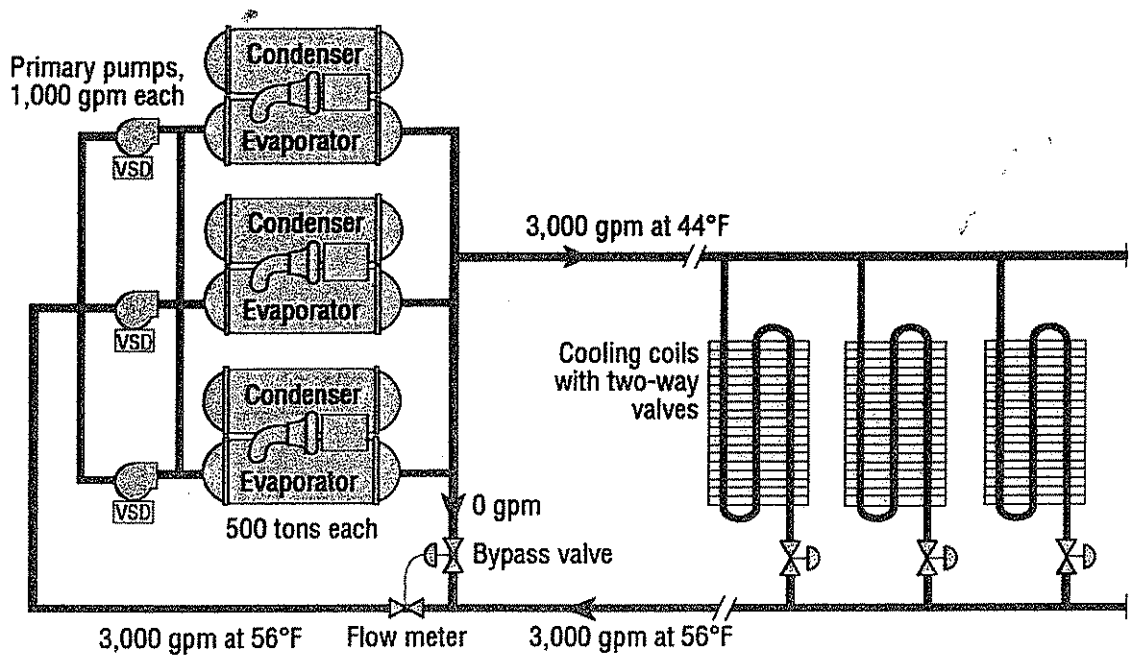


Chiller system [B] with constant primary flow/variable secondary flow



注意：背面尚有試題

Chiller system [C] with variable primary flow



Describe the control algorithms of these three systems (10 pts) and illustrate which one may have the highest energy efficiency (10 pts).