

ANSWER KEY - LABORATORY EXERCISE 15
CHARACTERISTICS OF CASCADE CONTROL

2. CASCADE LOOP SET UP

Secondary Controller

Is it appropriately fast?	Yes
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Primary Controller

Is it approximately quarter decay?	Yes
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Period of oscillation?	12 minutes
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3. CASCADE LOOP OPERATION

Initial Conditions

Primary process variable	275 DegF
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Secondary controller set point	280 P/hr
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Secondary controller output	35%
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After primary load change

Maximum deviation from set point	5.7 Deg
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Did the primary PV return to SP?	Yes
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Secondary controller set point	320 P/hr
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Secondary controller output	40%
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After secondary load change

Maximum deviation from set point	1.4 Deg
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Did the primary PV return to SP?	Yes
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Secondary controller set point	280 P/hr
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Secondary controller output	41.3%
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4. NON-CASCADE CONTROL OPERATION

Are the tuning parameters the same ...?	Yes
... bump the process?	No
After primary load change	
Maximum deviation from set point	7.1 Deg
Is this response approximately the same ...?	Yes
After secondary load change	
Maximum deviation from set point	11.8 Deg
Is this response approximately the same ...?	No
Is the response approximately the same ... as the response to a primary load upset?	Same