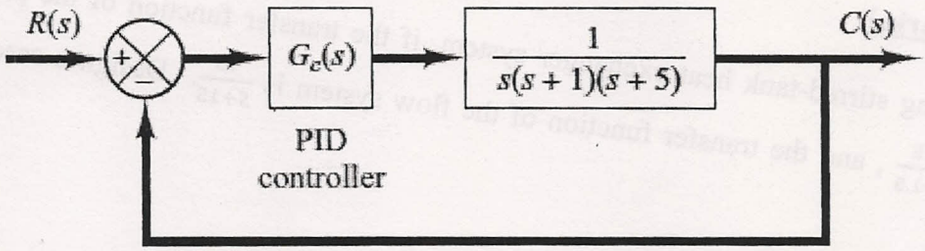
Kafrelsheikh University
Faculty of Engineering
Electrical Engineering Dept.
Final Exam
Total Marks: 70 Marks

Date: 3/1/2019
Time allowed: 3 Hours
Year: 4th Year
Subject Name: Industrial Control
Pages : 2

Course ILOS: a.1, a.4, a.5, a.10, a.11, b.1, b.2, b.3, b.11, b.13, c.1, c.2, c.3, c.4, c.7, d.6

Question (1) [25 Marks]

A-) Use Ziegler–Nichols tuning rule to determine the values of PID controller parameters for the following system. Mention how to fine tuning the PID parameters.

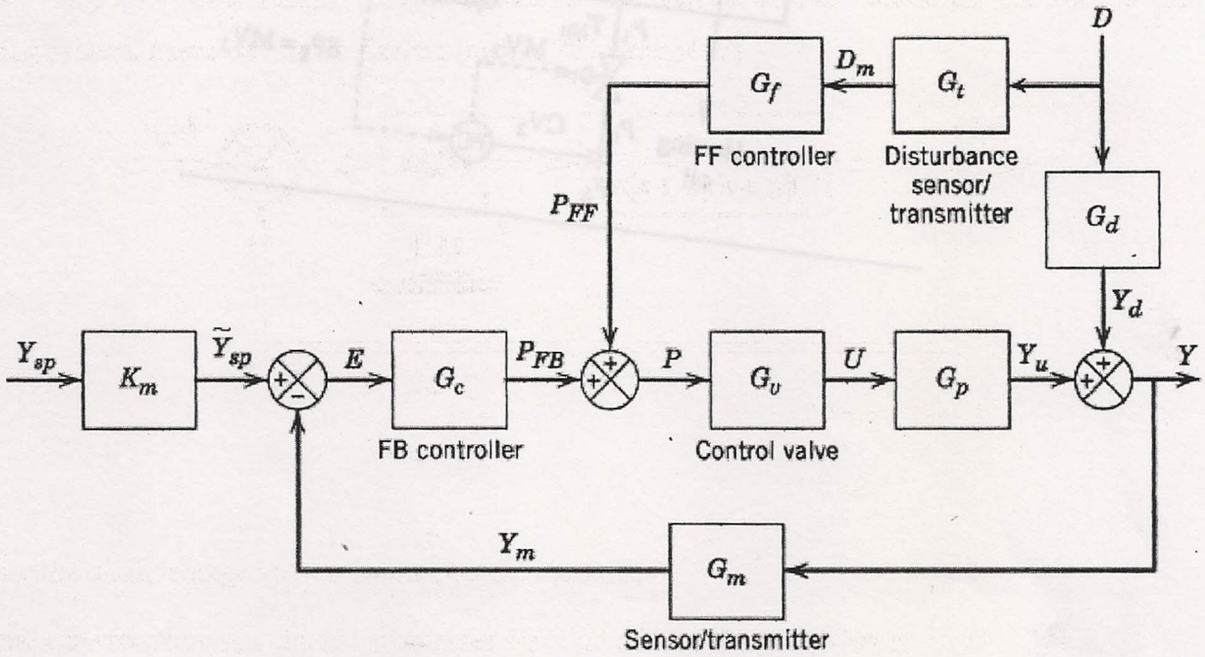


B-) Write a Matlab M-file program to check the a unit-step response of the system.

Question (2) [25 Marks]

A-) State the disadvantages of the feedforward controller.

B-) Obtain the feedforward controller transfer function of the following system:



C-) proof that the feedforward controller has no effect on the stability of the feedback control system.

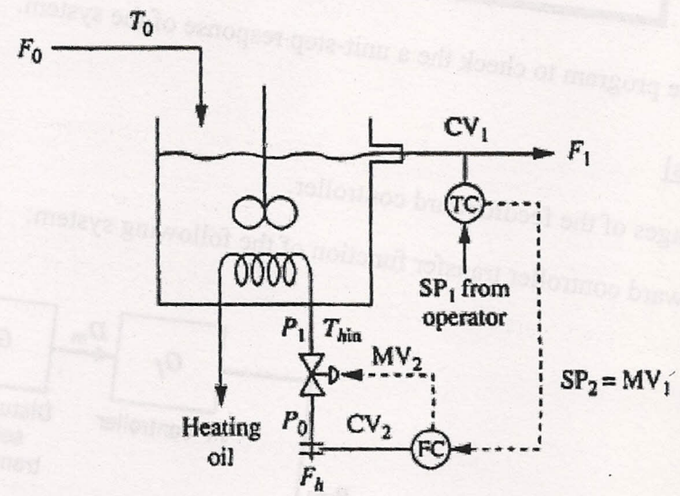
frelsheikh University
culty of Engineering
ectrical Engineering Dept.
nal Exam
otal Marks: 70 Marks

Date: 3/1/2019
Time allowed: 3 Hours
Year: 4th Year
Subject Name: Industrial Control
Pages : 2

Course ILOS: a.1, a.4, a.5, a.10, a.11, b.1, b.2, b.3, b.11, b.13, c.1, c.2, c.3, c.4, c.7, d.6

Question (3) [20 Marks]

3-) For the following stirred-tank heat exchanger system, if the transfer function of the primary plant (temperature) is $\frac{1.5}{S+1.5}$, and the transfer function of the flow system is $\frac{15}{S+15}$. Design a cascade control system.



With my best wishes

Dr. Sherif Imam

Dr sherif