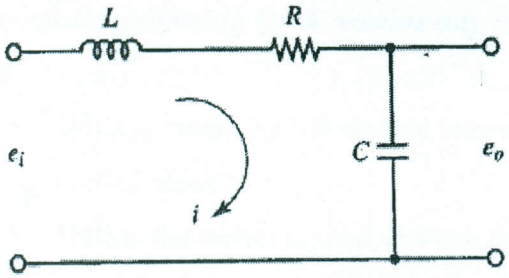
جـــامعة المنصـــورة
كـــلية الهـندسـة
قسم هندسة الحاسبات والنظم

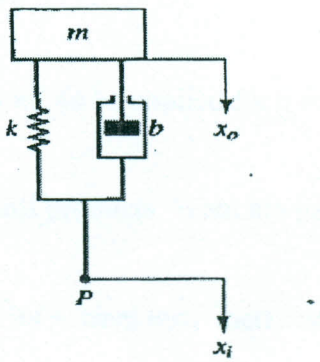
امتحان التحكم الآلى (الورقة الأولى)
الفرقـة الرابعـة – غـزل ونسـيج
الزمن ٩٠ دقيقة - ينايـــر ٢٠١٣

من فضلك اجب على كل ورقة من أوراق الامتحان فى جهة منفصلة من كراسة الاجابة

[1- a] Derive the transfer function of the armature controlled dc motor.

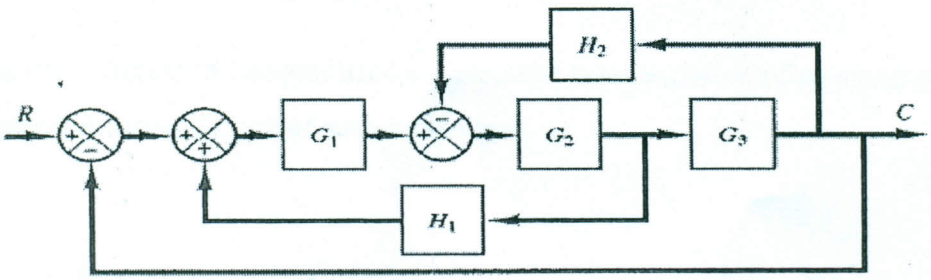
[1-b] Obtain the transfer function of the following control systems :





[1-c] A closed loop control system has a forward path gain $G(S)=\dfrac{10}{S(S+5)}$ **, and the feedback gain** $H(S)=3$**. Drive a mathematical expression for the error function E(S).**

[2-a] Construct the signal flow graph of the following control system , then Using Mason's Gain Formula find the overall transfer function .



[2-b] Find the range of K that make the system stable, the characteristic equation of the system is given by :

$$S(S^2+S+1)(S+2)+k=0$$

GOOD LUCK
Dr. M.S.M.ELKSASY

Mansoura University	*2012/2013*	*4th Year*
Faculty of Engineering.	*1 st Term Exam.*	*Time (fot two parts) : 3 hrs*
Textile Department	*Automatic Control (code 6413)*	*Full Mark : 90*

Part (2.)

Attempt the following Qs & assume any required data:

Q#1

- What is meant by Martindale technique? How it could be applied for a cotton carded sliver?
- Define the technological wave in the spinning mill products. What are its characteristics?
- Referring to the Uster Tester UT, what is meant by normal test, inert test and spectrogram?

Q#2

Explain each of the following:

Raper autoleveller that applied in worsted processing& mechanical autoleveller used for draw frames in cotton and wool industry.

Q#3

Name the different techniques used to detect the mass variation of spinning products. Represent graphically one of such techniques.

With Best Wishes

Prof. Dr. Eng. Ibrahim A. El-Hawary