**CEN455: Introduction Digital Control**

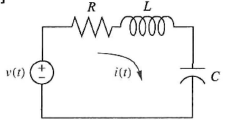
**Home-Work 1: 1st Semester 1439-1440**

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| --- | --- |
| **ID:** | **Name:** |

**Problem1:**

Given the electric network shown in Figure:

1. Write the differential equation for control solutions the network if *v*(t) = *u*(t), a unit step.



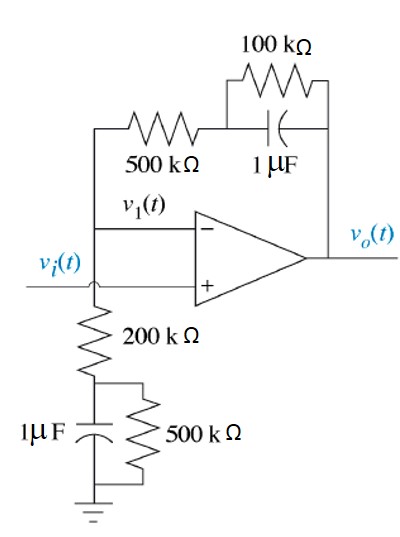
2. Solve the differential equation for the current, i(t), if there is no initial energy in the network.

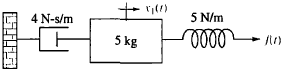
3. Make a plot of your solution if



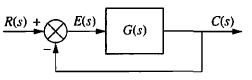
**Problem2:**

Find the transfer function, G(s) for system shown in Figures.





**Problem3:**



For the unity feedback system,

1. Find the steady-state error for inputs of



2. Find the range of K for closed-loop stability if:

