**Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ UCID\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**ENEL441 QUIZ 5 March 25, 2020**

**Please consider and insert your name as indicated**

This quiz is to be completed by you only. Your submitted filled out quiz is to be your work only and not a product of groupthink. So how can the university monitor this and ensure that these take-home exams are honestly completed and that your grade thereby becomes a fair assessment of your comprehension of the course material? We can’t and there is no point in even trying except to ask you to insert your name here as a promise that your submitted quiz is entirely your work.

I, (\_\_\_\_\_your name here\_\_\_\_\_) certify that the solutions provided to this quiz have been produced by myself only without collaboration with others.

Consider the feedback system given below with the plant as

Hc(s)

Hp(s)

+

-

R(s)

Y(s)

E(s)

**Q1(5)** Assume the compensator is

Generate a root locus plot of the closed loop trajectories for using the axis below. Label all of the open loop poles and zeros. Can G be selected for this compensator that makes the loop stable?

**Q2(5)** Now assume that the compensator is

Generate a root locus plot of the closed loop trajectories for using the axis below. Label all of the open loop poles and zeros.

**Q3(5)** Assume the compensator of question **Q2** and that G is selected such that the closed loop is stable, determine what is for the input of

**Aid Sheet**

One sided Laplace Transform , 

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
| 1 |  |  |  |
|  | 1 |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |



Poles of second order system ,

      rise time

State Space 

Electric motor with parameters , R internal resistance, current I flowing through motor gives torque ,  is rotation rate then induced back EMF voltage is 

roots of quadratic  