**27.11.2018**

**MECE 441 Control System Design Laboratory**

1. Given the unity feedback system;

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1. Find the transfer function of a lag-lead compensator that will;

* yield a settling time 0.5 second shorter than that of the uncompensated system,
* improve the steady-state error by a factor of 30.

The compensated system will have a damping ratio of 0.5. The compensator zero is at -5.

1. Find the compensated system’s gain.
2. Verify the design through simulation.
3. The unity feedback system shown in below;

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is to be designed to meet the following specifications:

* Overshoot: Less than 22%
* Settling time: Less than 1.6 seconds
* Kp = 15

1. Evaluate the performance of the uncompensated system operating at approximately 10% overshoot.
2. Design a passive compensator to meet the desired specifications.