BRAC UNIVERSITY

Department of Computer Science and Engineering

CSE 461: Introduction to Robotics
Assignment: 03

Suppose your ID is 19 70 43 91 and Section is 04. Take every 2 digit of your ID and your section and sort them in a descending order such that:

$$A = 91, B = 70, C = 43, D = 19, E = 04$$

Now, suppose you are a control systems engineer tasked with designing a control system for a motor.
The motor is set to maintain a speed of Z = (A-B) rad/s.
After switching on, you observed that the motor reaches a speed of:
(0.1 * Z) after E seconds
(0.5*Z) after E + E seconds
(0.9*Z) after (D+E) seconds
After reaching the set value, the motor speed initially oscillates and reaches a value of (Z + E) during its first peak after (D + E + E) seconds. Afterwards, the oscillations gradually settle down and the motor reaches within 5% of its final value after (D + E + E + B) seconds and within 2% of its final value after (D + E + E + A) seconds.

1. **Draw** the response diagram of the system in the passage. **[2 Marks]**
2. **Calculate** the Overshoot, Rise Time and Settling Time. **[3 Marks]**